Chapter 5: Actions to Achieve Our Goals

Introduction

In Chapter 4, the Chinook Conservation Strategy explains *where* salmon habitat should be protected and restored, and the *key processes and functions* to protect and restore to support salmon recovery. This chapter presents recommendations to WRIA 8 partners for *how* to protect or restore habitat. Based on the literature, management actions must be directed at landscape and reach scales:

> Effective restoration of river ecosystems within agricultural and urban landscapes must be applied at local (reach) and landscape (watershed) scales. Local stream reaches suffer from simplified channels, lack of woody debris, reduced riparian vegetation, and … other problems. Restoring local sites may serve to recreate historical river conditions conducive to ecological recovery and to enhance the effectiveness of broader efforts at watershed restoration…. However, restoration efforts conducted at the local level may be ineffective if problems are caused at the landscape scale in the watershed…. Long-term restoration of rivers depends on appropriate attention to problems emanating at the watershed scale. (Wissmar and Bisson, ed., 2003)

> Aquatic habitat conditions result from a complex web of biological and physical processes operating under the geomorphic and climatic constraints in the watershed…. Habitat management actions can affect aquatic habitat directly, or indirectly through disruption of the underlying processes and alteration of the physical environment in the watershed… Failure to identify and address these processes can lead to costly site-specific restoration actions that are unlikely to persist in the face of large-scale, persistent habitat forming processes. (Puget Sound TRT and Shared Strategy Staff Group, 2003)

In order to address these landscape and reach levels, actions were developed and are presented in three broad categories:

- Land use – actions which address ecological processes at a landscape scale, and which focus on protection of process and function more than restoration. Actions include incentives, regulations, best management practices (BMPs), programs, and policies.
- Site-specific habitat protection and restoration projects – actions which protect or restore a specific area or parcel, through acquisition, levee setback, revegetation, etc. There are also more general, subarea-wide recommendations that should lead to additional site-specific project recommendations in the future.
- Public outreach and education – actions that can apply at a specific location, to a particular target audience and/or basinwide, ranging from a regional marketing campaign to workshops for creekside landowners or industry professionals, to utility incentive programs. These actions include habitat protection and restoration, providing education about landscape scale and site-specific habitat needs.

Overview of Chapter

This chapter builds on the preliminary action lists (chapter 6) in the 12/31/03 Draft Plan Framework, and adds the following elements:

- Completion of actions for all Tier 1 subareas
- Prototype for integrating the three types of actions, in response to the Steering Committee's request

- Prototype for prioritizing site-specific projects
- Research agenda (presented in Appendix D)

We are seeking Steering Committee review of both prototypes, as well as the chapter in general. The integration prototype will then be applied to all three Chinook population areas for the November public review draft. Other elements that will be added for the November draft include:

- Tier 2 subareas (for all three action types)
- Tier 3 subareas (for land use and public outreach actions only)
- Additional WRIA-wide guidance for land use and public outreach

Chapter 5 is organized as follows:

- Introduction
- Overview of chapter
- Process for developing actions
- WRIA 8 Steering Committee guidance
- Context and relationship to other programs/processes
- Preliminary guidance on prioritizing actions
- Prototype for summarizing and integrating actions: North Lake Washington Chinook population
- Draft prioritized site-specific habitat protection and restoration actions

Note that Appendices F - I contain detailed action lists for each Chinook population, by action type (land use, site-specific project, public outreach). Appendix J includes WRIA-wide land use actions and related technical references; and, Appendix K describes additional methodology for developing actions.

Process for Developing Actions

The three types of actions were developed through separate but similar processes. Actions were developed:

- To be consistent with the Chinook Conservation Strategy (described in Chapter 4)
- Based on Steering Committee guidance (described below)
- To build on the *Near-Term Action Agenda* and other existing efforts (described below)

Actions were developed for each of the three Chinook populations in WRIA 8 and for the subareas within the migratory/rearing corridors. The actions were developed through a collaborative process, working closely with local stakeholders, jurisdiction staff, environmental and business representatives, project experts, and the WRIA 8 Technical Committee. Key committees and stakeholders for developing each action type included:

Land use actions: developed by the Land Use Subcommittee, consisting of local government and consultant planners representing more than 50% of participating jurisdictions, along with citizen activists and business representatives.

Site-specific projects: developed by local, sub-area experts and members of the Technical Committee, including local government staff, scientists, basin stewards, and citizen activists, to identify and evaluate projects.

Public outreach actions: developed by the Public Outreach Committee, consisting of public outreach staff from several of the participating jurisdictions, and citizen activists.

Research Agenda: developed by the Technical Committee and the committees listed above (located in Appendix D).

Additional details on the process for developing actions are in Appendix K. While lists of detailed actions are complete (and appended to this report), an assessment of what mix of actions is needed and the extent to which the actions will achieve necessary habitat change to recover salmon runs would require additional scientific analysis that has not been completed at this time. The Ecosystem, Diagnosis, and Treatment (EDT) model used by the WRIA 8 Technical Committee to provide a relative sense of the protection or restoration potential of different stream reaches and subareas is also designed to compare the relative effectiveness of proposed conservation actions. At the direction of the Steering Committee, the Technical Committee has not undertaken the 'treatment' step to compare the relative effectiveness of proposed conservation actions.

WRIA 8 Steering Committee Guidance

The WRIA 8 Steering Committee has provided guidance on how actions should be developed, both in its Mission and Goals Statements adopted in 1999, and during four work sessions held in the first half of 2004. While the entire Mission and Goals Statements guide the development of a science-based plan, several elements give specific guidance to the three action categories, as described below. (See Chapter 1 for the full text of the Mission and Goals Statements and description of work sessions.)

Guidance for Land Use Actions

The Steering Committee Mission and Goals Statements state that the salmon conservation plan shall:

- ✓ Recognize that local governments are key implementing entities for the plan, because of their responsibilities for land use.
- ✓ Direct most future population growth to already urbanized areas, because new development has greater negative effects on hydrology and ecological health of streams in rural than in urban areas.
- ✓ Create incentives for behavior that would support plan goals.
- ✓ Be coordinated with the Growth Management Act, local and regional responses to the Clean Water Act, other environmental laws and past/current planning efforts.

The Steering Committee gave additional guidance about land use actions at work their work sessions during spring 2004:

- ✓ Land use actions should be part of the plan, including specific recommendations in Tier 1 and Tier 2 sub-basins and a menu of land use tools that could be applied WRIA-wide.
- ✓ Specific actions in Tiers 1 and 2 should not be required; however, the potential risks to Chinook habitat if recommended land use actions are *not* accomplished should be assessed.
- ✓ Actions should be linked to specific science-based outcomes, and a variety of approaches should be included to meet those outcomes.

Guidance for Site-Specific Projects

The development of site-specific habitat protection and restoration projects was guided by the Chinook Conservation Strategy, which was guided by the WRIA 8 Steering Committee Mission and Goals Statements, detailed in Chapter 1.

At their work sessions, the Steering Committee provided additional guidance on development and prioritization of site-specific habitat protection and restoration projects:

- Keep all potential projects on the list for this draft.
- Use subarea experts to qualitatively evaluate potential habitat protection and restoration projects for their "Benefits to Chinook" and "Feasibility" (approved criteria in Appendix K). Use Feasibility evaluation to indicate if project is likely to be implemented in short or long-term.
- Identify restoration projects for the Issaquah population, but do not prioritize them until more data are collected and analyzed to ensure a better understanding of the genetics and interrelation of WRIA 8's Chinook populations.
- Use both EDT modeling results (in particular, the habitat diversity index) and existing science-based habitat protection programs, such as Waterways and Cedar River Legacy, to prioritize potential habitat protection projects.

Guidance for Public Outreach/Education Actions

The Steering Committee Mission and Goals Statements say the plan shall:

- ✓ Provide multiple opportunities during plan development for two-way dialog with the public and affected constituencies because the plan cannot succeed without their understanding and support.
- ✓ Recognize that long-term salmon conservation requires that the public understands and appreciates how everyday actions affect salmon.
- ✓ Emphasize education and public involvement, including the widespread use of volunteers to protect and restore habitat.

At their work sessions, the Steering Committee provided additional guidance on the role of public involvement in developing the plan, and the importance of education actions:

- ✓ A communications plan is needed to build interest in and support for the conservation plan, prior to its release to the public. Support for the plan will be needed from the general public as well as special interest groups. Outreach efforts need to be extended to elected officials, city staff, special interest groups, and the media, as well as various sectors of the public.
- ✓ Before we can expect the public to take any interest in helping to develop a salmon conservation plan they need to be made aware that a problem exists, upon which they have a direct effect. People are less motivated to take action on things they feel they have no control over than ones they can influence. We need to convey the issues and why the public should care.
- ✓ One of most important roles of public outreach is heightening awareness about the fact that everyone within the watershed has a role in the health of salmon and water quality. Our job in the outreach and education arena is largely to reinforce the "we all live downstream" mantra – and translate it into individual messages through easily digestible sound bites.

Context and Relationship to Other Programs/Processes

Many programs, projects, and laws are already in place to protect or restore salmon habitat in WRIA 8. The following sub-sections briefly describe existing programs and processes, and their relationship to recommended actions in the draft plan.

The Steering Committee Mission and Goal Statements say that while the plan should focus on habitat, it should also encourage appropriate reforms in harvest and hatchery practices, management of non-native species, and other activities outside of its direct control, which may be necessary for successful conservation of salmon. This draft recommends actions that would need to be carried out by agencies other than participating jurisdictions, such as actions that address harvest and hatchery practices, State Department of Transportation, and Department of Ecology. Harvest and hatcheries will be integrated with habitat actions by Shared Strategy through the regional, larger ESU-scale recovery plan. The Steering Committee will need to decide how other action recommendations should be forwarded to other agencies.

Land Use Actions

WRIA 8 is heavily urbanized; 30% of the watershed lies inside the Urban Growth Area (UGA). The population for the entire WRIA in 2002 was approximately 1.3 million, and is projected to be 1.6 million in 2022 (see details, Appendix J). As shown on the map in Chapter 4 (page 4), the headwaters of all Tier 1 spawning areas are in the rural area, they all drain into urban areas, and nearly all of the migratory/rearing corridors are inside the UGA.

Impacts of historical land use change on salmonid habitat in WRIA 8 are described in Chapter 3, Science Foundation. There is extensive literature on the effects of urbanization on ecological processes; see, for example, the Tri-County Urban Issues ESA Study (R2 Resource Consultants 2000). Land use and land cover changes at the reach and watershed scale have significant impacts on salmon habitat. For example, at the reach scale, clearing of riparian vegetation for development reduces overhanging vegetation and shade cover, leading to temperature increases, loss of large woody debris recruitment, and reduced terrestrial insects. At the landscape scale, loss of forest cover and increased impervious surfaces disrupt hydrological function (e.g., causing lower base flows during summer and higher winter storm flows), and decrease water quality (e.g. sedimentation, chemical runoff). Resulting habitat conditions are less favorable for Chinook spawning and rearing, and more favorable for predators.

Salmon habitat is directly and indirectly affected by a wide range of laws and programs implemented by local, state and federal agencies. These include the Growth Management Act (GMA), stormwater management programs, and water rights. By building on existing policies and regulations, and anticipated revisions to these regulations and programs, WRIA 8 land use actions can be implemented more efficiently and in coordination with reaching other goals. Some of the regulatory and programmatic revisions already under way include:

- Comprehensive plan updates to incorporate revised 20 year growth targets, as required by GMA – by December ‘04
- Critical (or sensitive) areas ordinances are being reviewed and revised based on Best Available Science (BAS), as required by GMA – by December ‘04

- Shoreline Master Programs – being updated to incorporate Washington Dept. of Ecology's revised guidance, based on the schedule adopted by 2003 State Legislature: Snohomish County by 2005; King Co. and cities over 10,000 by 2009; all other cities linked to GMA compliance cycle between 2011 – 2014
- NPDES Phase 1 and Phase 2 municipal stormwater permits – Wash. Dept. of Ecology expects to develop Phase 1 and 2 permits by fall 2004; jurisdictions will need to adopt permits by 2005

Site-Specific Projects

The lists of potential habitat and restoration projects for the Tier I subareas draw from many years of watershed planning in the WRIA 8. Watershed plans have been completed for many parts of the watershed including the Cedar River (lower and upper), Bear Creek, Issaquah Creek and the Sammamish River. There are also habitat protection programs that have been identifying and protecting best remaining habitat in many parts of the watershed, including Bear Creek Waterways, Issaquah and Lake Sammamish Waterways, and Cedar River Legacy. Many of the potential habitat protection projects included in this draft plan were first identified by one of these programs.

The U.S. Army Corps of Engineers Lake Washington General Investigation Study has also been a source of potential projects and will ultimately be a source of potential funding for design and construction of habitat restoration projects in the future.

The Chinook Conservation Strategy and the draft prioritization of potential habitat and restoration projects will be used in identifying and prioritizing projects for funding under the State Salmon Recovery Funding Board and the regional King Conservation District funds.

Public Outreach Actions

The region has a strong history of salmon-related outreach and education programs at the federal, state, and local levels. Local examples include: King County basin stewards, Seattle Urban Creeks program, and the Bellevue Stream Team. WRIA 8 public outreach actions will help to reinforce key messages of these and other programs that have common goals. Important messages that will be conveyed by WRIA 8, which are consistent with other local and regional messages, include:

- Water conservation promoted by natural yard care programs and the utilities (power, water, wastewater treatment) – and salmon conservation
- Pesticide reduction promoted by King Co. Local Hazardous Waste Management, Natural Yard Care, health care industry, vets (for pet health), fishing industry, restaurant industry – and salmon conservation
- Increased use of native plants by stream teams, community outreach programs, natural yard care, native plant salvage, noxious weed programs – and salmon
- Trip Commute Reduction, One Less Car, Bike it You'll Like it, plus all the regional transit programs.

Preliminary Strategy for Prioritizing Actions

As noted, it is important to take actions at both the watershed and reach scale, to address ecological process and function. Priorities for implementing actions are based on the Chinook Conservation Strategy, including the ecosystem objectives and guiding

principles, the watershed evaluation framework, and the reach specific EDT priorities. The ecosystem objectives say to protect, restore, or enhance watershed processes that create habitat characteristics favorable to salmon, and to protect or enhance habitat required by salmon during all life stages. The watershed evaluation framework recommends that actions in areas of high watershed function should focus on protecting habitat attributes and habitat-forming processes; actions in areas of moderate or low watershed function will require restoration of key habitat attributes and habitat-forming processes. In Tier 3 areas with episodic Chinook use, conservation actions should focus on protecting and enhancing water quality and natural streamflow regimes to benefit other salmonid species and downstream areas used by Chinook.

Each of the three action types has been evaluated and prioritized differently. If the treatment phase of EDT is completed in the future, this could provide a more consistent and quantitative approach to prioritizing conservation actions. For this draft, actions are evaluated as follows:

- *Land use*: actions are described but not prioritized; initial ideas for prioritizing are presented for future consideration.
- *Site-specific projects*: draft prioritized lists of site-specific habitat protection and restoration projects for each of the Tier I subareas are included in this chapter (with the exception of Issaquah Creek restoration projects and Lake Sammamish)
- *Public outreach*: actions have been evaluated qualitatively by a set of criteria, described below; some actions in the appendices are prioritized.

Prioritizing Land Use Actions

Land use actions were developed by local planners based on the technical hypotheses identified in the Chinook Conservation Strategy. The actions reflect local knowledge and experience about types of land use tools that are likely to be adopted and implemented. However, specific priorities among land use actions were not established for several reasons: 1) the EDT model gives priorities by reach, but land use laws and programs are applied at a jurisdictional, not reach, level; 2) while the Technical Committee provided some general guidance on priorities (described below), the committee did not have the time to develop a more detailed approach. Several ideas for prioritizing land use actions for the November draft are presented below; the Steering Committee could guide us on what additional analysis would be useful to policy makers.

Recommended land use actions include protecting forest cover, minimizing new road crossings, and protecting and restoring riparian buffers through a variety of tools such as critical areas ordinances, stormwater management programs, and shoreline master programs. The WRIA 8 Technical Committee gave the following general guidance for prioritizing land use actions based on subarea condition:

> Maintenance of forest cover, riparian cover, and water quality are all important. Where forest cover is intact it should be maintained so that hydrologic processes are maintained and the potential for adverse water quality impacts is minimized. However, in situations where there is degraded forest cover there is less opportunity to restore via landscape processes – in these situations riparian buffers become especially important. Similarly, if forest cover and riparian cover are both degraded, stormwater management actions to maintain water quality and quantity become critical. (TC meeting summary, Feb. 28, 2004)

The Technical Committee could work with the land use staff to further refine this guidance, based on details in the watershed evaluation framework. For example, data

on remaining forest cover in each subarea might be used to establish priorities for land use actions within or across subareas. The land cover change analysis could also better inform land use action priorities once it is completed.

Another source of guidance on land use priorities could come from local jurisdictions, as they review Best Available Science (BAS) for their critical areas ordinance revisions. For example, Bellevue, Kirkland, and Mercer Island could provide input on shoreline priorities based on BAS. King County's BAS and proposed Critical Areas Ordinance provides guidance, similar to that of the Technical Committee, on the relative importance of forest cover retention and aquatic buffer sizes. These proposed regulations allow flexibility in stream buffer widths (and associated clearing restrictions) in the rural area if a landowner opts to prepare a stewardship plan for the property. Buffer widths are established through stewardship planning depending on the location of the site in the basin (upper or lower basin), the condition of the basin and the existing condition of the buffer on-site. For example, where buffer conditions are highest, some additional clearing would be allowed, whereas where buffer conditions are low, higher forest retention standards would apply. The proposed regulations also impose a higher aquatic buffer in urban unincorporated areas in sub-basins with higher environmental conditions (special urban habitat areas) than in those with more degraded conditions. (See Appendix J, Table 2 for detail.)

Prioritizing Site-Specific Projects

Potential site-specific habitat protection and restoration projects were identified by ad hoc groups of subarea experts and members of the WRIA 8 Technical Committee based on the Technical Committee's technical hypotheses for the protection and restoration for each Tier I subarea. The identified projects were prioritized based on the Chinook Conservation Strategy and the EDT modeling results, existing science-based habitat protection programs, as well as a qualitative evaluation by subarea experts of each potential project's "Benefit to Chinook" and "Feasibility".

The draft prioritization of potential <u>protection</u> projects is based on:

- The Tier of the subarea,
- The EDT results for the subarea reaches (the habitat index) AND/OR whether or not the project/reach has been identified as a priority by an existing science-based habitat protection program such as Waterways or Cedar River Legacy, and
- How the proposed habitat protection projects are rated by subarea experts and WRIA 8 Technical Committee members on their benefit to chinook.

The draft prioritization of potential <u>restoration</u> projects is based on:

- The Tier of the subarea,
- The EDT Restoration Potential of the subarea reaches, and
- How the proposed projects are rated by subarea experts and WRIA 8 Technical Committee members on their benefit to chinook and feasibility.

At the end of this chapter, there are draft prioritized lists of potential protection and restoration projects for the Cedar River, Lake Washington, Bear Creek, Sammamish River, Issaquah Creek (protection only), the Locks/Ship Canal/Lake Union and the Nearshore. The project descriptions are summarized in these lists. For full detailed lists of potential protection and restoration projects, given reach by reach for each Tier I subarea, see Appendices F-I. See Appendix K for description of criteria used to

determine "Benefits to Chinook" and "Feasibility" and greater detail on the prioritization process.

Prioritizing Public Outreach Actions

Public outreach actions were developed by the Public Outreach Committee based on the technical hypotheses in the Chinook Conservation Strategy. Actions were also evaluated according to a set of criteria, and actions for some Chinook populations have been generally prioritized based on these criteria (see Appendices F through I). The following criteria were used to qualitatively evaluate public outreach actions:

- Desired scientific outcome based on an identified habitat condition: recommended outreach actions focus on those conditions that can be modified through outreach and education.
- Target audience: those who have the most control over a particular habitat condition and those who could make changes that would have the greatest impact on restoration and/or protection efforts (e.g., shoreline property owners)
- Proven track record or model: outreach strategies that have been tried before or are based on existing models may have a higher success rate or may be easier to implement than newly hatched ideas.
- Level of Financial Commitment: based on a relative scale of resource investment (high, medium, low).
- Implementation at local or WRIA-wide level: "Local" actions could be carried out by individual jurisdictions as soon as they are willing and able. They do not require coordination of all the partners to put into effect. However, for some outreach efforts that require large financial commitment or ones that might necessitate major behavioral changes, the leveraging effects of a "WRIA-wide" effort might prove more effective.

Prototype for Integrating Actions by Chinook Population

Overview

This section presents a prototype for summarizing and integrating actions in the North Lake Washington Chinook population. This prototype responds to the Steering Committee request that habitat actions be integrated to show relationships of actions to ecological process and function, and to show relationships and tradeoffs among the different types of actions. This prototype will be revised for the public review draft, based on Steering Committee guidance and developed for the Cedar River and Issaquah Creek Chinook populations as well. Steering Committee review will address such issues as overall usefulness of information, appropriate level of detail, etc.

For this draft, all *detailed* land use, site-specific, and public outreach actions are appended as follows:

- ***Appendix F:*** Cedar River Chinook (including Lake Washington)
- ***Appendix G:*** North Lake Washington Chinook (including Sammamish River, northern portion of Lake Washington)
- ***Appendix H:*** Issaquah Creek Chinook (including Lake Sammamish, Sammamish River, northern portion of Lake Washington)
- ***Appendix I:*** Migratory/rearing areas serving all 3 populations (Ship Canal, locks, nearshore)

- ***Appendix J:*** WRIA-wide actions. Includes, for this draft, land use actions (including enforcement and variance policies), and technical references for aquatic buffer widths, stormwater management programs, low impact development practices, etc.
- ***Appendix K:*** Details on methodology for developing actions

The prototype includes the following elements:
- Brief overview of basin geomorphology and salmon use
- Integration graphic linking ecological processes in the North Lake Washington Chinook population Tier 1 subareas to the three types of actions: land use, site-specific projects, education actions
- Summary table listing three types of actions with reference to ecological processes that they address
- Draft land use actions
- Draft prioritized site-specific projects (sample for illustrative purposes)
- Draft prioritized public outreach actions (sample for illustrative purposes)

Prototype for North Lake Washington Chinook
Basin overview: The Bear Creek subarea covers approximately 32,100 acres or 50 square miles. The subarea is located in southern Snohomish County and northern King County and is composed of three main lowland stream tributaries: Bear Creek, Cottage Lake Creek, and Evans Creek. Bear Creek empties into the Sammamish River in the City of Redmond. Both Bear Creek and Cottage Lake Creek provide excellent spawning and rearing habitat for chinook, coho, sockeye, and kokanee salmon and steelhead trout.

Little Bear Creek is currently the least developed of the three main lowland tributaries to the Sammamish River (the other two are North and Swamp Creeks), and it has the least degraded habitat. More than 50% of the North and Swamp Creek subareas are covered with impervious surface, and are located almost entirely within the urban growth area (2% of North Creek is outside the UGA). Little Bear Creek supports runs of chinook, sockeye, kokanee, and coho salmon. The basin encompasses a drainage area of approximately 15 square miles, begins in Snohomish County, flows southward into King County, and empties into the Sammamish River. Approximately 80 percent of the Little Bear Creek subarea is located within Snohomish County. Anadromous salmon and trout access almost all of this system, though there are some significant passage barriers to adults at low-flow periods and to juveniles during high flows.

Integration graphic: see next page, page 11 (fold-out)

Summary table of actions: see page 12 (fold-out)

Draft land use actions: see pages 13 through 15

Draft prioritized site-specific projects: see pages 16 through 18

Draft prioritized public outreach actions: see page 19

Insert integration graphic (11x17)

Insert summary table of actions (11X17)

LAND USE ACTIONS FOR NLW TRIBUTARIES (Tier 1 Subareas) *6/30/04 Draft*	
POLICY/INSTITUTIONAL CONTEXT: ***Jurisdictions:*** Redmond, Sammamish, Woodinville, Bothell, Kenmore, Mill Creek, Everett, King County, Snohomish County ***Growth pressures (inside UGA):*** Redmond, Sammamish, Woodinville, Bothell, Kenmore, Mill Creek, Redmond Ridge Urban Planned Development (UPD), unincorporated King Co (including Bothell PAAs, Redmond PAAs), and unincorporated Snohomish Co. (including Maltby UGA, Bothell Municipal Urban Growth Area (MUGA), Mill Creek MUGA, Everett MUGA). [Note regionally recognized urban centers?] ***Percent of basin inside UGA:*** UGA runs through reach 6 of Bear Creek (in Lower Bear subarea) [need to calculate %] ***Program/mitigation opportunities:*** Brightwater mitigation, I-405 mitigation, Bear Creek Basin Plan (adopted by King Co. Council in 1992, resulted in stormwater changes, and adoption of 150 ft. stream buffers and 35% clearing limit in 1995)	**SCIENCE CONTEXT:** ***Watershed evaluation rating:*** • *Lower Bear* Subarea: Tier 1 – ***Core*** Chinook use; ***Moderate*** watershed function • *Upper Bear* Subarea: Tier 1 – ***Core*** Chinook use; ***High*** watershed function • *Cottage Lake* Subarea: Tier 1 – ***Core*** Chinook use; ***High*** watershed function ***Watershed evaluation summary:*** <u>*Lower Bear* Subarea:</u> Relative impact factors are: • High – flow volume • Moderate – total impervious area, % of high gradient streams • Low – road crossings Relative mitigative factors: • High - % of low gradient streams, wetland area • Moderate – riparian forest cover • Low – forest cover <u>*Upper Bear* Subarea:</u> Relative impact factors are: • Moderate – flow volume, % of high gradient streams • Low – road crossings, total impervious area Relative mitigative factors: • High – forest cover, riparian forest cover, wetland area • Moderate – % of low gradient streams <u>*Cottage Lake* Subarea:</u> Relative impact factors are: • Moderate – flow volume • Low – road crossings, total impervious area, % of high gradient streams Relative mitigative factors: • High – wetland area, % of low gradient streams • Moderate – forest cover, riparian forest cover

TECHNICAL PRIORITIES FROM WRIA 8 CONSERVATION STRATEGY:

<u>Basin-wide protection priorities for Upper Bear, Lower Bear, Cottage Lake:</u>

- Protect headwater areas, wetlands, and sources of groundwater (e.g., seeps and springs) to maintain hydrologic integrity and a temperature regime that supports Chinook.
- To maintain existing high relative level of watershed function and hydrologic integrity (especially maintenance of sufficient baseflows), maintain forest cover, wetland areas, and riparian forest and minimize increases in impervious surface and road crossings.
- Protect water quality to prevent adverse impacts from fine sediments, metals (in sediments and water), and high temperatures. Adverse impacts from road runoff, residential development, and agriculture should be prevented.
- Provide adequate stream flow to allow upstream migration and spawning.
- Maintain floodplain connectivity by minimizing road crossings and minimizing/removing floodplain structures.

Basin-wide restoration priorities for Upper Bear, Lower Bear, Cottage Lake:

- Adopt source control best management practices to reduce inputs to the system.
- Adopt stormwater management practices to reduce sediment inputs from bed scouring high flows.
- Restore riparian areas to provide future sources of LWD that can improve channel stability and contribute to pool habitat creation, and to reduce peak water temperatures that favor non-native species.

Upper Bear special considerations:

- Subarea is in best shape – it is a regionally significant resource area. Riparian function still good, relatively high level of condition for forest cover, riparian forest cover, wetlands. Need to protect processes.
- Sedimentation likely from clearing and grading and possibly from horse farms, in tributaries

Lower Bear special considerations:

- Sedimentation problem likely from clearing and grading and possibly from horse farms, in tributaries.
- Address channel confinement in lower reaches.

Cottage Lake Creek special considerations:

- Sources of groundwater recharge to Cold Creek should be identified and protected to maintain cold temperatures and hydrologic integrity in Cottage Lake Creek and Lower Bear Creek
- Protect spawning areas throughout Cottage Cr.
- Address channel confinement in lower reaches.

LAND USE ACTIONS BASED ON TECHNICAL PRIORITIES:

Basin-wide for Upper Bear, Lower Bear, Cottage:

- Growth management: while general GMA guidance to put new growth in urban areas applies, there is additional growth pressure in Bear and Cottage Creeks [Evans, Little Bear?] on areas currently outside the UGA. There are urban type developments outside the UGA (e.g., Maltby UGA, Redmond Ridge UPD, Redmond and Sammamish city parks, all of which have infrastructure (e.g., roads, sewer/water lines) serving them. Local jurisdictions should stand firm on not moving the UGA. It may be necessary to acquire high quality rural properties in the vicinity of urban areas to insure their long-term protection.
- Research approach taken during the 90s (which included strong regulations, active education/stewardship, incentives); evaluate what element(s) were most effective in protecting and restoring habitat and try to replicate these again in Bear and in other watersheds. Could be element of adaptive management.
- Continue approach taken in 1990s and early 2000s through WaterWays 2000, to preserve or restore riparian buffers. Approach combined a local steward doing targeted public outreach to streamside landowners, and a range of incentives (e.g., acquisition, current use tax assessment, conservation easements). Jurisdictions should cost share steward.
- Strong enforcement and prohibiting exemptions and variances from clearing and buffer standards are key to effectiveness of any regulatory protection taken.
- Encourage reforestation in general and in riparian areas, e.g., through streamlining permit process, tax incentives. Conifer underplanting should be included.
- Protect wetland function to attenuate peak flows wherever possible in basin, through adoption and enforcement of adequate wetland buffers through critical areas ordinances.
- Identify sources and then adopt source control of fine sediments and metals in mainstems and tributaries (e.g., from new construction during clearing and grading; sand on roads; farms and overpasturing) through stormwater management erosion and sediment controls, through clearing and grading ordinances, and the King County livestock program.
- Adopt stormwater provisions to address high flows, flashiness, and protection of base flows, including forest retention, and low impact development (LID) BMPs. LID can help maintain infiltration wherever possible.
- Adverse impacts from road runoff should be prevented through stormwater BMPs and by minimizing number and width of roads. Pursue opportunities to retrofit existing roadways with stormwater BMPs.
- Road widening projects should be designed to minimize impacts, and can provide mitigation opportunities.
- Road crossings should be minimized to maintain floodplain connectivity.
- Investigate and address impact of municipal and other water withdrawals (including Class A water utilities and Class B systems) on flow conditions throughout basin. As water rates increase, incidence of illegal

withdrawals and exempt wells may increase. Need to work closely with Dept. of Ecology, local health departments, and water suppliers on regulations, incentives, and education related to these issues. Policies prohibiting or discouraging multiple exempt wells may be necessary. Enforcement and education related to withdrawals and maintaining base flows is critical. [Education can also address role of properly maintained and sited on-site septic systems in providing groundwater recharge. See PO list.]

- Related issue is need for increased water conservation through utility programs and education (see PO list).

Upper Bear actions:

- Maintain and effectively enforce current stream and wetland buffers and forest cover protections through KC critical areas ordinance update (e.g., rural buffers, 65-10 program), and through Snohomish Co. CAO revisions. If the proposed standards (e.g., 65-10 and 165 ft stream buffers in rural areas) are not adopted in the revised King Co. CAO, King County should commit to maintaining the 150 ft. stream buffers that are currently in place.
- Headwater wetlands, seeps, and critical groundwater recharge areas should be protected. Better mapping is needed in headwaters to determine critical groundwater recharge areas to protect.
- As part of SR 522 expansion, try to minimize impacts on Bear Cr. and Cottage Cr. headwaters, e.g., locate as far away as possible from headwaters, minimize width, minimize stream crossings.
- Beaver pond management issues: each jurisdiction handles this differently.

Lower Bear actions:

- Implement incentives and regulations to enhance riparian buffers and to reforest upland areas, and regulations to protect what's there. Redmond is currently doing Shoreline Master Program and CAO updates; they want to be more proactive about protecting buffers. Redmond will continue to use incentives (e.g., fee simple purchase and conservation easements) to protect riparian corridor. Need to limit impacts of trails and other facilities in buffers.
- There's limited water quality treatment for road runoff; work with Wash. DOT and local jurisdictions (e.g., King Co. Roads) to pursue opportunities to retrofit existing roadways with stormwater BMPs. SR 520 and Avondale Rd. should be retrofitted for water quality treatment.
- Commercial/industrial development areas should be investigated for water quality and runoff issues and potential stormwater facilities planned and built.
- Where property owners have ditched and armored the creek, use education and incentives to encourage restoration of channel complexity and riparian condition.
- Where wetland mitigation banking is being considered along Lower Bear, may need a policy that states that wetland banking needs to consider salmon habitat needs first. Other wetland banks have precluded flooding and restoration of floodplain functions – limited opportunities for salmon habitat restoration.

Cottage Lake/Cold Creek actions:

- Adopt strong protections of Cold Creek Natural area, through critical areas ordinances (could apply CARA protections even though this is not for domestic water supply?)
- Identify and protect groundwater sources and flow paths for Cold Creek headwaters. (Woodinville has expressed willingness to place higher levels of protection here.)
- Protect spawning areas throughout Cottage Cr., through buffer protections, prohibiting floodplain development, forest protection, minimizing impervious area, livestock BMPs and cost share, etc.
- Where property owners have ditched and armored creek, use education and incentives to encourage restoration of channel complexity and riparian condition.
- Need to address encroachment into Native Growth Protection Easements in reach 3 (see discussion of NGPE encroachments in Table 1, Appendix J).

Bear Creek Protection Site-Specific Project Prioritization

Note: This is only a sample for illustrative purposes; see full list of prioritized site-specific projects for Bear/Cottage Lake on page 34 in this chapter.

About the following list of potential protection projects:

- **There are separate project lists of potential protection projects for Lower Bear Creek, Upper Bear Creek and Cottage/Cold Creeks.** As described in Chapter 4, actions need to be taken in all of these "Tier I" areas for the North Lake Washington Chinook population. Upper Bear Creek and Cottage/Cold Creeks are areas of higher habitat function than Lower Bear Creek.
- The reaches are given in the order of which reaches are closest to template conditions in terms of large woody debris, riparian conditions and channel connectivity (these attributes are important for creating a diversity of habitats that can be used by key Chinook life stages). This prioritization of the reaches was developed using the "habitat diversity index" in the EDT modeling results.
- **The "Existing Protection Priority" column indicates whether or not a potential project has been identified as a priority in an existing science-based habitat protection program – in this case the Bear Creek Waterways Program. Potential habitat protection projects that are a priority for the Bear Creek Waterways program have a "Yes" in this column and have been shaded.**
- Each potential project was identified and evaluated by an ad hoc group of Bear Creek experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- **In setting protection priorities, decision-makers should use the reach prioritization, whether or not the project was already identified as priority by the Bear Creek Waterways program AND the qualitative evaluation of the projects' benefits to Chinook and feasibility.**
- **More details about the potential projects can be found in the reach by reach project lists in Appendix G.**
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Habitat Protection Recommendations that Bear Creek Ad Hoc Group felt were very important (identified for each reach in Lower Bear, Upper Bear and Cottage/Cold Creeks) and high benefit to Chinook:

- Protect riparian forested buffers along Bear Creek.
- Protect forest cover by acquiring forest property, development rights/conservation easements, and providing enhanced incentives to retain and plant forest area environments.
- Protect instream flows throughout subarea, particularly in Lower Bear. Begin by identifying legal and illegal water withdrawals.
- Need to develop a policy on lands acquired for habitat purposes to manage both the types and level of human use to ensure that habitat goals are not threatened by overuse or competing interests.

These general recommendations should lead to site-specific project recommendations in the future.

Lower Bear Creek Draft Protection Project Prioritization (Reaches 1-7)

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Bear Creek Waterways)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
1	Reach 2 – Restoration area to RR tracks		No potential projects are identified at this time.
2	Reach 7 – Cottage Lake Creek Confluence to 133rd St.	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach D". In particular, there may be opportunities to protect forested area near Classic Nursery.
		No	**High Benefit/Harder to Implement:** Forest Cover Protection – There are good opportunities in reach to protect contiguous forest cover.
3	Reach 6 – Trailer Park to Cottage Lake Creek Confluence	No	**High Benefit/Easier to Implement:** Forest Cover Protection – Particularly seek to protect forested area south of Puget Power Trail and at corner of 116th and Avondale Road.
		No	**High Benefit/Harder to Implement:** Protect undeveloped properties in reach.
4	Reach 5 – Evans Creek to trailer park	No	**High Benefit/Moderately Difficult to Implement:** Protect floodplain and wetland areas adjacent to Keller Farm property in this reach (spans reach 4 and 5).
5	Reach 3 – RR tracks to Avondale Rd.	No	**Medium Benefit/Moderately Difficult to Implement:** The Washington Department of Transportation owns property off NE Redmond Way in this reach. If the Department sells this property, should be protected from development.
6	Reach 4 – Avondale Rd. to Evans Creek Confluence	No	**High Benefit/ Moderately Difficult to Implement:** Protect floodplain and wetland areas adjacent to Keller Farm property in this reach (spans reach 4 and 5).

Continued

Draft Outreach and Education Actions for North Lake Washington Chinook

Note: This is only a sample for illustrative purposes; see full list of outreach actions for Bear/Cottage Lake in Appendix G.

Habitat conditions	Priority	Proposed Action	Target Audience	Proven Track Record	Level of Financial Commit-ment	Local/ WRIA level
Habitat quality; Habitat quantity	High	Continue WaterWays program. Expand incentive programs to include smaller properties not currently eligible under existing program.	Shoreline property owners	PBRS, open space current use taxation	High	WRIA or at least county wide
Habitat quality; Habitat quantity	High in rural, Medium in urban/ suburban	Increase outreach concerning the benefits of trees and basin-wide forest coverage to protect water quality and maintain instream flows. Include information that links canopy cover to storm water issues.	General public, but property owners in particular	Sammamish ReLeaf; Mountains to Sound Greeway; City ordinances	Variable - medium	Local or WRIA
Habitat quality; Habitat quantity	High in rural areas	Provide classes, tours, and assistance in implementing livestock operation BMPs; gear classes to both larger scale horse farms, and to small hobby farms.	Livestock owners (horse farms)	Horses for Clean Water and KCD programs	Low	Basin
Habitat quality; Habitat quantity	Medium	Increase interpretation at restoration sites (include signs, tours, and other methods.) When appropriate use restoration sites for demonstration purposes. Restore streamside habitat at Tolt Pipeline Trail and Bear Creek crossing as a demonstration site.	Shoreline property owners	Redmond River Walk, Juanita Beach, Classic Nursery, Lake Forest Park Stewardship projects	Medium	Local

Draft Prioritized Site-Specific Habitat Protection and Restoration Actions

The prioritized project lists are organized as follows:

Cedar River Tier 1 Subareas:
- Cedar River Protection (Lower and Middle Cedar subareas) – page 21
- Cedar River Restoration (Lower and Middle Cedar subareas) – page 25
- Lake Washington Protection and Restoration – page 29

North Lake Washington Tier 1 Subareas:
- Bear Creek Protection (Lower and Upper Bear, Cottage/Cold Creeks) – page 34
- Bear Creek Restoration (Lower and Upper Bear, Cottage/Cold Creeks) – page 41
- Sammamish River Protection and Restoration – page 46

Issaquah Creek Tier 1 Subareas:
- Issaquah Creek Preliminary Protection – page 51
- Note that Lake Sammamish projects are not yet prioritized; please refer to Appendix H for complete list of Lake Sammamish protection and restoration projects

Migratory/rearing areas serving all 3 populations:
- Locks/Ship Canal/Lake Union restoration – page 59
- Nearshore protection and restoration – page 63

Cedar River Draft Protection Project Prioritization

About the following list of potential protection projects:

- **There are separate project lists of potential protection projects for the Lower and Middle Cedar River reaches**. As described in Chapter 4, actions need to be taken in both the Lower Cedar River and the Middle Cedar River. The Middle Cedar River is an area of higher habitat function than the Lower Cedar River. Actions in the Lower Cedar River help to increase the abundance and productivity of the Cedar River Chinook population and actions in the Middle Cedar River help to increase their spatial distribution.
- **The river reaches are given in the order of which reaches are closest to template conditions in terms of large woody debris, riparian conditions and channel connectivity** (these attributes are important for creating a diversity of habitats that can be used by key Chinook life stages). This prioritization of the reaches was developed using the "habitat diversity index" in the EDT modeling results.
- **The "Existing Protection Priority"column indicates whether or not a potential project has been identified as a priority in an existing science-based habitat protection program – in this case the Cedar River Legacy Program. Potential habitat protection projects that are a priority for the Cedar River Legacy program have a "Yes" in this column and have been shaded.**
- Each potential project was identified and evaluated by an ad hoc group of Cedar River experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **In setting protection priorities, decision-makers should use the reach prioritization, whether or not the project was already identified as priority by the Cedar River Legacy program AND the qualitative evaluation of the projects' benefits to Chinook and feasibility.**
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- **More details about the potential projects can be found in the reach by reach project lists in Appendix F.**
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Lower Cedar River Draft Protection Project Prioritization (Reaches 1-11)

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Cedar River Legacy)	Potential Project Description and Evaluation
1	Reach 4 – SR 169 Bridge (RM 4.2) to Upstream of Landslide (RM 4.7)	No	**High Benefit/Easier to Implement** Protect existing riparian habitat and LWD in reach
		No	**High Benefit/Easier to Implement:** Study options to protect habitat in reach 4 and reduce flooding and erosion in Ron Regis Park (such as adding LWD and levee setback)
2	Reach 8 - RM 8.2 to Cedar Mt. Rd. (RM 9.4)	Yes	**High Benefit/Easier to Implement:** Jones Reach - 29 acres, 16 parcels targeted for protection
		No	**High Benefit/More Difficult to Implement:** Protect riparian buffer behind Scott-Indian Grove levee
3	Reach 7 - RM 7.3 to 8.2	Yes	**High Benefit/Easier to Implement:** Cedar Rapids Reach - Acquire ~15 acres necessary for proposed floodplain restoration project
		No	**High Benefit/Easier to Implement:** Protect pockets of intact riparian forest along Cedar River Trail and SR 169 such as area across from Cook-Jefferies levee
4	Reach 3 – I-405 (RM 1.6) to SR169 Bridge (RM 4.2)	No	**High Benefit/Easier to Implement:** Protect existing forested, riparian habitat in City of Renton's parkland upstream of I-405 bridge on left bank
5	Reach 5 - Upstream of Landslide (RM 4.7) to RM 5.8	No	**High Benefit/Easier to Implement:** Protect riparian vegetation on left bank in area owned by King County
7	Reach 11 – Down-stream of Taylor Creek (RM 12.7) to RM 13.8	Yes	**High Benefit/Easier to Implement:** Protect 5 acre parcel including 218th Place side-channel
		Yes	**High Benefit/Easier to Implement:** Protect Mouth of Taylor Creek Reach - acquire approximately 40 acres of forested riparian floodplain associated with both the Cedar mainstem and the lower reach of Taylor Creek

Lower Cedar River Draft Protection Project Prioritization, cont.

8	Reach 10 - RM 10.2 to just downstream of Taylor Creek (RM 12.7)	Yes	**High Benefit/Moderately Difficult to Implement:** Protect Lower Lions Stream Reach - 39 acres, 12 parcels, including a large area of riparian forested floodplain between the Cedar River and SE 188th Street
		Yes	**High Benefit/Moderately Difficult to Implement:** Protect Byers Reach - 58 acres, 17 parcels on both banks of river
9	Reach 9 - Cedar Mt. Rd. (RM 9.4) to RM 10.2	Yes	**High Benefit/Easier to Implement:** Protect Belmondo Reach - 71 acres, 10 parcels with no levees, numerous side channels, braided reach
11	Reach 2 - Logan St. Bridge (RM 1) to I-405 (RM 1.6)	No	**Moderate Benefit/Easier to Implement:** Protect and maintain existing tree cover within reach where possible

Middle Cedar River Draft Protection Project Prioritization (Reaches 12-18)

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Cedar River Legacy)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
1	Reach 16 - RR Trail Crossing at RM 17 to Arcadia (RM 19.0)	No	**Medium-Low Benefit/More Difficult to Implement:** Consider protecting gravel recruitment area and unstable slopes on the right bank, at the downstream end of Reach 16 and upstream of the Cedar River trail bridge
		No	**Uncertain Benefit/Uncertain Difficulty:** Consider protecting floodplain area on left bank, downstream of "BN Nose" property and upstream of Orchard Grove revetment
3	Reach 18 - RR Trail Crossing at RM 19.6 to Landsburg Dam (RM 21.7)	Yes	**High Benefit/Easier to Implement:** Protect Landsburg Reach - 87 acres, including forested floodplain and areas of unarmored, steep bank

Middle Cedar River Draft Protection Project Prioritization, cont.

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Cedar River Legacy)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
4	Reach 15 - RR Trail Crossing at RM 16.0 to RR Trail Crossing at RM 17.0	No	**High-Medium Benefit/Moderately Difficult to Implement:** Explore protection of left bank forested floodplain area adjacent and upriver of property already in King County ownership in this reach
5	Reach 14 - RM 15.0 to RR Trail Crossing at RM 16.0	Yes	**High-Medium Benefit/Moderately Difficult to Implement:** Protect Dorre Don Meanders Reach - protect 71 acres, 14 parcels including riparian forest, spring-fed features including side channel, stream, and oxbow habitats (spans reach 13-14)
6	Reach 12 - RM 13.8 to RM 14.3	No	**High-Medium Benefit/Easier to Implement:** Protect Royal Bend - Protect ~7 parcels, riverfront and floodplain on rightbank (spans reach 12-13)
7	Reach 13 - RM 14.3 to RM 15.0	No	**High-Medium Benefit/Easier to Implement:** Protect Royal Bend - Protect ~7 parcels, riverfront and floodplain on rightbank (spans reach 12-13)
		Yes	**High-Medium Benefit/Moderately Difficult to Implement:** Protect Dorre Don Meanders Reach - protect 71 acres, 14 parcels including an extensive floodplain riparian forest, valley floor spring-fed features including side channel, stream, and oxbow habitats (spans reach 13-14)

Cedar River Draft Restoration Prioritization

About the following list of potential restoration projects:

- **There are separate project lists for the Lower and Middle Cedar River reaches**. As described in Chapter 4, actions need to be taken in both the Lower Cedar River and the Middle Cedar River. The Middle Cedar River is an area of higher habitat function than the Lower Cedar River. Actions in the Lower Cedar River help to increase the abundance and productivity of the Cedar River Chinook population and actions in the Middle Cedar River help to increase their spatial distribution.
- **The river reaches are listed in the order of their restoration potential according to the EDT model results.**
- **The reaches have also been grouped into A, B, C reaches based on having similar restoration potential** (e.g. reaches within the A grouping have similar restoration potential; the A reaches have a higher restoration potential than the B reaches).
- **All of the reaches in the Middle Cedar River have a similar habitat restoration potential and are therefore grouped together as "A Reaches".**
- **More details about the potential projects can be found in the reach by reach project lists in Appendix F.**
- Each potential project was identified and evaluated by an ad hoc group of Cedar River experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Recommendations that the Cedar River Ad Hoc Group felt were important and can be applied throughout the subarea:

- A basinwide study needs to be done of the Cedar River to identify where large woody debris should be added.

Lower Cedar River Draft Prioritization of Restoration Projects (Reaches 1-11)

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
A Reaches: Highest Priority for Increasing Abundance and Productivity	
Reach 2 - Logan St. Bridge (RM 1) to I-405 (RM 1.6)	**High-Medium Benefit/Easier to Implement:** Re-vegetate Reach 2
	High-Medium Benefit/Harder to Implement: Explore Redevelopment Options in Reach 2
Reach 3 - I-405 (RM 1.6) to SR169 Bridge (RM 4.2)	**High Benefit/Easier to Implement:** Explore any need for riparian restoration in City of Renton owned parkland.
	High Benefit/Harder to Implement: In Reach 3, there is an area of industrial use on the right bank of the river that is likely to be redeveloped in the near future. Seek ways to improve riparian habitat on site.
	High Benefit/Harder to Implement: In Reach 3, there is multi-family residential use on the right bank of river. Explore opportunities to remove impervious surface area and bank hardening on site, and restore riparian buffer.
	High Benefit/Harder to Implement: Maplewood neighborhood flood buyouts and floodplain restoration
B Reaches	
Reach 5 - Upstream of Landslide (RM 4.7) to RM 5.8	**High Benefit/Easier to Implement:** Bucks Curve buyout and floodplain restoration
	Medium-Low/Easier to Implement: Additional (1-2) flood buyouts near Elliot Bridge
Reach 7 - RM 7.3 to 8.2	**High Benefit/Easier to Implement:** Cedar Rapids levee removal and floodplain restoration
	High Benefit/Harder to Implement: Protect riparian buffer behind Cook/Jeffries levee and reconnect side channel
Reach 10 - RM 10.2 to just downstream of Taylor Creek (RM 12.7)	**High Benefit/Easier to Implement:** Lions Club property side channel restoration
	High Benefit/Harder to Implement: Byers Reach Side Channel - Levee removal and floodplain restoration
	High Benefit/Harder to Implement: Cedar Grove Mobile Home Park flood buyout and levee removal
	High Benefit/Harder to Implement: Cedar Grove Road Junkyard buyout and floodplain restoration
	High Benefit/Harder to Implement: Pursue Additional Buyouts near McDonald levee and restore floodplain
	Medium Benefit/Easier to Implement: Cedar Grove Road levee removal and floodplain restoration

Lower Cedar River Draft Prioritization of Restoration Projects, cont.

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Reach 4 - SR 169 Bridge (RM 4.2) to Upstream of Landslide (RM 4.7)	**High Benefit/Easier to Implement:** Conifer under-planting in forested riparian areas within reach, particularly in Ron Regis park
	High-Medium Benefit/Harder to Implement: Modify Elliot Levee to allow greater flow into constructed side-channels at site
	Uncertain Benefit/Uncertain Difficulty: Restore side-channel on right bank across from golf course. Need to determine if project still feasible and beneficial after changes to area caused by the landslide.
Reach 6 - RM 5.8 to 7.3	**High Benefit/Moderately Difficult to Implement:** Hertzman levee modification and floodplain restoration
	High Benefit/Moderately Difficult to Implement: River Bend Mobile Home Park buyout and floodplain restoration
	High Benefit/Harder to Implement: Explore partial removal of Riverbend levee to reduce channel confinement and connect Cavanuagh Pond to the mainstem river.
	Medium Benefit/Easier to Implement: Continue riparian restoration at Cavanaugh Pond, particularly on river-side of property.
C Reaches	
Reach 11 - Just downstream of Taylor Creek (RM 12.7) to RM 13.8	**High Benefit/Moderately Difficult to Implement:** Getchman levee setback and floodplain restoration
	High Benefit/Moderately Difficult to Implement: Partial removal Jan Road and Rutledge/Johnson levees and floodplain restoration
	High-Medium Benefit/Moderately Difficult to Implement: Enhance 218th side channel once protected
Reach 1 Mouth to Logan St. (RM 1)	**High-Medium Benefit/Easier to Implement:** Re-vegetate right and left bank of Reach 1 with overhanging vegetation where possible
	Medium Benefit/Harder to Implement: Explore Opportunities to Improve Habitat in Reach 1 where there are extensive areas of industrial land use
	Medium Benefit/Harder to Implement: Explore removing bridges at mouth of Cedar River and South Boeing Bridge if area is redeveloped
Reach 8 - RM 8.2 to Cedar Mt. Rd. (RM 9.4)	**High Benefit/Easier to Implement:** Remove remainder of Progressive Investment revetment
	Uncertain Benefit/Easier to Implement: Study potential for restoration on left bank on forested riparian area owned by King County
Reach 9 - Cedar Mt. Rd. (RM 9.4) to RM 10.2	**High Benefit/Easier to Implement:** WPA revetment removal and floodplain restoration
	High Benefit/Harder to Implement: Cedar Mountain Revetment removal and floodplain restoration

Middle Cedar River Draft Restoration Project Prioritization (Reaches 12-18)

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation of Benefits to Chinook and Feasibility
A Reaches: Highest Priority for Increasing Distribution	
Reach 14	**High-Medium Benefit/Harder to Implement:** Dorre Don area flood buyouts and floodplain restoration
	Medium Benefit/Easier to Implement: Dorre Don area side channel enhancements (spans Reaches 13,14)
Reach 15	**Medium Benefit/ Harder to Implement:** Orchard Grove flood buyouts and floodplain restoration
Reach 18	**High Benefit/Harder to Implement:** Explore feasibility of passing large woody debris over Landsburg Dam.
	Medium-Low Benefit/Harder to Implement: Reconnect wetland 69 (historic oxbow) to river.
	Low Benefit/Moderately Difficulty to Implement: Explore whether or not revetments at river mile 20.2 and 20.6 still exist. If they do, consider removing them.
Reach 17	**Medium Benefit/Easier to Implement:** Enhance Wingert side-channel on left bank, upper end of reach.
Reach 16	**Uncertain Benefit/Uncertain Difficulty to Implement:** If floodplain area on left bank, downstream of "BN Nose" property is protected, explore restoration opportunities.
Reach 13	**Medium Benefit/Moderately Difficult to Implement:** Dorre Don area side channel enhancements (spans Reaches 13,14)
Reach 12	**Medium Benefit/Moderately Difficult to Implement:** Explore removal of Royal Arch revetment

Lake Washington Draft Potential Project Prioritization

About the following list of potential restoration projects:

- **The lake sections are listed in the order of their restoration potential according to the EDT model results.** The habitat diversity index for protection ranking of reaches was not developed for Lake Washington due to low number of protection opportunities.
- **The lake prioritization was done for both the Cedar River Chinook population and the North Lake Washington Chinook population combined.** There is greater certainty about how juvenile Cedar River Chinook use the south end of Lake Washington then about how North Lake Washington Chinook use the north end of Lake Washington.
- **More details about the potential projects can be found in the section by section project lists in Appendix F.**
- Each potential project was identified and evaluated by an ad hoc group of Lake Washington experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Recommendations that Lake Washington Ad Hoc Group felt were important and can be applied throughout the Lake:

- Work with private property owners to remove bulkheads, convert nearshore habitat to shallow beach and restore riparian vegetation. Can be done throughout Lake Washington, but most important in south end of the lake, sections 1-2 where juvenile Chinook from the Cedar River are known to use the shallow water habitat.
- Work with private property owners to reduce number of docks by using community docks.
- Explore opportunities to restore <u>small</u> creek mouths used by juvenile Chinook (if creeks are large enough to support cutthroat can increase predation risk).
- Investigate lake lift stations for combined sewer overflows. May be harming juvenile fish.

Lake Washington Draft Protection Prioritization

Section Priority	Section #	Existing Protection Priority?	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
4	7	No	**High Benefit/Easier to Implement:** St. Edwards State Park - Protect existing high quality, natural shoreline in park.

Lake Washington Draft Restoration Prioritization (Sections 1-7)

Sections of Lake Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Section 1: Southern most part of Lake Washington Near Cedar River Mouth	**High Benefit/Moderately Difficult to Implement:** Shoreline restoration of WA Department of Natural Resources Property as part of trail project. Remove a portion of flume (along lakeside), create shallow water habitat, protect existing cove, and plant overhanging riparian vegetation along shore.
	High Benefit/Hard to Implement: Shoreline restoration between mouth of Cedar and Coulon Park - explore options to work with private property owners to remove bulkheads, restore shallow water habitat and riparian vegetation.
	High-Medium Benefit/Easier to Implement: Enhance Mouth of Kennydale Creek - in Gene Coulon Park. Project would enhance mouth, remove silt, and facilitate recruitment of sand and gravel. Should also protect shallow water delta.
	High-Medium Benefit/ Moderately Difficult to Implement: Enhance Mouth and Lower John's Creek - Enhance lower channel to reduce predator habitat, restore riparian vegetation, and protect water quality and quantity from stormwater flows.
	Medium Benefit/Easier to Implement: Cedar River Delta - Investigate reducing bird predation by reducing bird perch habitat on delta.
Section 2: Southern end Mercer Island, Mouth of Mapes Creek and May Creek	**High Benefit/ Easier to Implement:** Rainer Beach Lake Park - Removal of marina and bulkhead, regrading the shoreline to a gentle slope, and placing fine-grained substrate. Remove invasive vegetation and add native overhanging vegetation. Protect existing high quality shoreline habitat in park. From Seattle Shoreline Park Inventory and Habitat Assessment.

Lake Washington Draft Restoration Prioritization, cont.

Sections of Lake Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Section 2, cont.	**High Benefit/Easier to Implement:** Pritchard Island Beach - In northern reach, remove concrete bulkhead and regrade shoreline to gentle slope. Add fine substrate where needed. Remove invasive vegetation and plant native vegetation.
	High-Medium Benefit/Moderately Difficult to Implement: Mouth of Mapes Creek Restoration - Restore mouth of Mapes Creek, which is currently in a culvert that empties into deep water in Lake Washington.
	High-Medium Benefit/Moderately Difficult to Implement: Restoration of Mouth of May Creek - Restore mouth and lower reaches May Creek. Increase beach, set back banks, plant riparian buffers and add LWD to improve habitat for juvenile Chinook.
	Medium Benefit/Easier to Implement: Martha Washington Park - Regrade shoreline to gentle slope, add fine-grained beach substrate, remove riprap and rock armoring. Scallop shoreline edge to enhance habitat diversity and avoid damaging large cottonwood trees. Plant native vegetation.
	Medium Benefit/Harder to Implement: Port Quindal Shoreline Restoration and Site Cleanup - restore shoreline, cleanup hazardous material on site and cap with sand. Explore restoration of small tributary and its mouth on the site.
	Low Benefit/Harder to Implement: Mouth of Taylor Creek - remove lumber debris that provides bass habitat. Explore restoration of mouth.
	Low Benefit/Harder to Implement: Explore buyout between Rainier Beach Park and Beer Sheva. Connect and restore wetland behind Pritchard Island.
Section 5: Montlake Cut including Union Bay from Madison Park Beach to Webster Point	**High Benefit/Easier to Implement:** Montlake Cut/ Union Bay - protect water quality from runoff from 520.
	Medium Benefit/Harder to Implement: Webster Point - important area for predation. Need to deter aggregation of predators, especially bass. Explore reducing number of docks - establish community docks.

Lake Washington Draft Restoration Prioritization, cont.

Sections of Lake Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Section 7: North End of Lake, Including Mouths of MacLeer, Lyons, Sammamish River, Tracey Owen Park (East to West line starts at southern end of St. Edwards Park)	**High- Medium Benefit/Moderately Difficult to Implement:** Kenmore Marina - Improve pollution control at marina. In critical location right at mouth of Sammamish River.
	Medium Benefit/Moderately Difficult to Implement: Sammamish River Mouth and Inglewood Golf Course - Restore wetlands at mouth of Sammamish River (south side of mouth), remove invasive, non-native plants and plant native riparian vegetation.
	Medium Benefit/Moderately Difficult to Implement: O.O. Denny Park Shoreline Restoration - Remove bulkhead, plant riparian vegetation. Explore restoration of Denny Creek mouth.
	Medium-Low Benefit/Moderately Difficult to Implement: Tracy Owen Station Park Shoreline Restoration - shoreline near the mouth of the Sammamish River is degraded by the presence of weedy and invasive species, erosion, and shoreline armoring. Explore removal of wood waste from area - potential bass habitat and bad for benthic conditions. Project may include beach creation in future. The proposed project could also restore the shoreline by removing invasive plant species, planting native vegetation, and replacing existing shoreline armoring with bioengineered stabilization features.
Section 3: South of I-90 including East and West Channel of Mercer Island, Seward Park and Mercer Slough	**Medium Benefit/Easier to Implement:** Seward Park Shoreline Restoration - Restore approximately 2,000 feet of shoreline along Bailey Peninsula in Seward Bay by putting in finer substrate and overhanging vegetation.
	Medium Benefit/Easier to Implement: Newcastle Beach Park - remove bank hardening and bulkheads, plant riparian vegetation and protect existing riparian area.
	Medium Benefit/Harder to Implement: Remove Wall Under I-90 - Remove creosote wall under I-90. Leaches toxics into mouth of Mercer Slough.
	Medium-Low Benefit/Moderately Difficult to Implement: Lake Washington Boulevard South - Control invasive weeds at several locations and re-establish native vegetation. Remove debris along the water's edge in the north portion, from Mount Baker Park to Stan Sayres Park. Grade the shoreline, add beach gravels, and plant native riparian shrubs to return the shoreline to natural conditions.
	Medium-Low Benefit/Harder to Implement: Groveland Park - explore opportunities for restoration.
	Medium-Low Benefit/Harder to Implement: Clarke Beach Park - explore daylighting and restoration of creek mouth in park.

Lake Washington Draft Restoration Prioritization, cont.

Sections of Lake Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Section 4: Between 520 and I-90	**Medium-Low Benefit/Easier to Implement:** Chism Park Shoreline Restoration - remove bulkhead and place gravels.
	Low Benefit/Easier to Implement: Medina Beach Park - Shoreline restoration for approximately 1/3 of park as part of park upgrade project. Will include riparian revegetation and area will be off-limits for swimmers and boats.
	Low Benefit/Moderately Difficult to Implement: Lake Washington Boulevard - Remove concrete debris and blackberry bushes, regrade, and re-establish native trees and shrubs on the shoreline boulevard from East Pine Street to the Madrona Drive intersection.
	Low Benefit/Harder to Implement: Enatai Park Shoreline Restoration - explore potential to remove bulkhead and place gravels.
Section 6: North of 520 Including Sand Point, Thorton Creek Mouth, Yarrow Bay and Juanita Bay	**Low Benefit/Easier to Implement:** Magnuson Park Shoreline North - Remove dumped material, concrete, and other unnecessary shoreline hardening measures, regrade, install appropriate beach gravels, and plant with native trees and shrubs in the north end of the park.
	Low Benefit/Moderately Difficult to Implement: Magnuson Park Shoreline South - Remove dumped material, concrete, and other unnecessary shoreline hardening measures, regrade, install appropriate beach gravels, and plant with native trees and shrubs in the south end of the park.
	Low Benefit/Harder to Implement: Matthews Beach - Restore creek mouth at NE 80th to original location.
	Low Benefit/ Harder to Implement: Juanita Bay Beach - Explore restoration of creek mouth, return to more natural outlet. Remove armoring.

Bear Creek Draft Protection Project Prioritization

About the following list of potential protection projects:

- **There are separate project lists of potential protection projects for Lower Bear Creek, Upper Bear Creek and Cottage/Cold Creeks.** As described in Chapter 4, actions need to be taken in all of these "Tier I" areas for the North Lake Washington Chinook population. Upper Bear Creek and Cottage/Cold Creeks are areas of higher habitat function than Lower Bear Creek.
- The reaches are given in the order of which reaches are closest to template conditions in terms of large woody debris, riparian conditions and channel connectivity (these attributes are important for creating a diversity of habitats that can be used by key Chinook life stages). This prioritization of the reaches was developed using the "habitat diversity index" in the EDT modeling results.
- **The "Existing Protection Priority" column indicates whether or not a potential project has been identified as a priority in an existing science-based habitat protection program – in this case the Bear Creek Waterways Program. Potential habitat protection projects that are a priority for the Bear Creek Waterways program have a "Yes" in this column and have been shaded.**
- Each potential project was identified and evaluated by an ad hoc group of Bear Creek experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- **In setting protection priorities, decision-makers should use the reach prioritization, whether or not the project was already identified as priority by the Bear Creek Waterways program AND the qualitative evaluation of the projects' benefits to Chinook and feasibility.**
- **More details about the potential projects can be found in the reach by reach project lists in Appendix G.**
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Habitat Protection Recommendations that Bear Creek Ad Hoc Group felt were very important (identified for each reach in Lower Bear, Upper Bear and Cottage/Cold Creeks) and high benefit to Chinook:

- Protect riparian forested buffers along Bear Creek.
- Protect forest cover by acquiring forest property, development rights/conservation easements, and providing enhanced incentives to retain and plant forest area environments.
- Protect instream flows throughout subarea, particularly in Lower Bear. Begin by identifying legal and illegal water withdrawals.
- Need to develop a policy on lands acquired for habitat purposes to manage both the types and level of human use to ensure that habitat goals are not threatened by overuse or competing interests.

These general recommendations should lead to site-specific project recommendations in the future.

Lower Bear Creek Draft Protection Project Prioritization (Reaches 1-7)

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Bear Creek Waterways)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
1	Reach 2 – Restoration area to RR tracks		No potential projects are identified at this time.
2	Reach 7 – Cottage Lake Creek Confluence to 133rd St.	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach D". In particular, there may be opportunities to protect forested area near Classic Nursery.
		No	**High Benefit/Harder to Implement:** Forest Cover Protection – There are good opportunities in reach to protect contiguous forest cover.
3	Reach 6 – Trailer Park to Cottage Lake Creek Confluence	No	**High Benefit/Easier to Implement:** Forest Cover Protection - Particularly seek to protect forested area south of Puget Power Trail and at corner of 116th and Avondale Road.
		No	**High Benefit/Harder to Implement:** Protect undeveloped properties in reach.
4	Reach 5 – Evans Creek to trailer park	No	**High Benefit/Moderately Difficult to Implement:** Protect floodplain and wetland areas adjacent to Keller Farm property in this reach (spans reach 4 and 5).
5	Reach 3 – RR tracks to Avondale Rd.	No	**Medium Benefit/Moderately Difficult to Implement:** The Washington Department of Transportation owns property off NE Redmond Way in this reach. If the Department sells this property, should be protected from development.
6	Reach 4 – Avondale Rd. to Evans Creek Confluence	No	**High Benefit/ Moderately Difficult to Implement:** Protect floodplain and wetland areas adjacent to Keller Farm property in this reach (spans reach 4 and 5).

Upper Bear Creek Draft Protection Project Prioritization (Reaches 8-15/16)

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Bear Creek Waterways)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
Unranked by EDT Model because above Chinook distribution. Placed as top priority by WRIA 8 Technical Committee because affects all reaches down-stream.	Reaches 15/16 – .5 miles above Woodinville-Duvall Rd. to Paradise Lake	No	**High Benefit/Easier to Implement:** Forest Cover Protection - In particular, acquire fee interests or conservation easements in Snohomish County on forested headwaters of Cottage Lake Creek and Bear Creek (700 acres in four ownerships).
		Yes	**High Benefit/Easier to Implement:** Protect Paradise Valley, headwaters for Bear Creek. Ensure that protected property is used consistently with habitat protection.
		Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach A". In particular, protect Stevens and Dolittle properties.
1	Reach 14 – Top of beaver dam complex to .5 miles above Woodinville-Duvall Rd.	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach A and B".
2	Reach 13 – 160th to top end of beaver dam complex	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach B".
3	Reach 9 – 141st to to top end of beaver dam complex	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach D". In particular, pursue protection of the Grandstan property at the upstream end of this reach and undeveloped properties that could be restored.

Upper Bear Creek Draft Protection Project Prioritization, cont.

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Bear Creek Waterways)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
4	Reach 10 - Top end of beaver dam complex to Struve Creek	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach B". There are blocks of contiguous forested riparian area that should be protected.
5	Reach 8 – 133rd St. to 141st St.	Yes	**Very High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach D". In particular, forested riparian parcels contiguous to already protected properties. Also protect undeveloped properties that can be restored like the Swanson Horse Farm.
6	Reach 11 – Struve Creek to 158th St.	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach includes "Reach B".
7	Reach 12 – 158th St. to 160th St.	Yes	**High Benefit/Harder to Implement:** Forest Cover Protection - Particularly protect forest cover on the Granston property.
		Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach B".

Cottage/Cold Creeks Draft Protection Project Prioritization

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Bear Creek Waterways)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
Unranked by EDT Model because above Chinook distribution. Placed as top priority by WRIA 8 Technical Committee because affects all reaches downstream.	Cold Creek 1/2	Yes	**High Benefit/Easier to Implement:** Protect Cold Creek Headwaters/Recharge Area
		No	**High Benefit/Moderately Difficult to Implement:** Cold Creek Protection - Determine the source of and properly protect the aquifer for the Cold Creek groundwater springs in Cottage Lake Creek. (Note: groundwater flows from incorporated Woodinville and possibly parts of Little Bear subarea and Lake Leota)
		Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach C." In particular, large forested parcels south of NE Woodinville Road.
1	Reach 3 – Good habitat to 2nd Avondale Way crossing	No	**High Benefit/Moderately Difficult to Implement:** Protect riparian forested buffers along Cottage Lake Creek. In particular, stop encroachment into riparian buffers that are part of Native Growth Protection Easements in reach.
		Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach E."
2	Reach 2 – 1st Avondale Way crossing to good habitat	Yes	**High Benefit/Harder to Implement:** Protect 40-acre parcel on Cottage Lake Creek (Nickels Farm).
		Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach E."
3	Reach 1 – Mouth to 1st Avondale Way crossing	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach E."

Cottage/Cold Creeks Draft Protection Project Prioritization, cont.

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Bear Creek Waterways)	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
4	Reach 4 – 2nd Avondale Way crossing to wetland below lake	Yes	**High Benefit/Easier to Implement:** Protect Cold Creek Headwaters/Recharge Area
		Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach C."
5	Reach 5/6 – Head-waters of Cottage Lake Creek	Yes	**High Benefit/Harder to Implement:** Continue Bear Creek Waterways program to protect best remaining habitat. This reach is part of Waterways "Reach C."

Bear Creek Draft Restoration Prioritization

About the following list of potential restoration projects:

- **There are separate project lists of potential protection projects for Lower Bear Creek, Upper Bear Creek and Cottage/Cold Creeks.** As described in Chapter 4, actions need to be taken in all of these "Tier I" areas for the North Lake Washington Chinook population. Upper Bear Creek and Cold/Cottage Creeks are areas of higher habitat function than Lower Bear Creek.
- **The river reaches are listed in the order of their restoration potential according to the EDT model results.**
- **The reaches have also been grouped into A, B reaches based on having similar restoration potential** (e.g. reaches within the A grouping have similar restoration potential; the A reaches have a higher restoration potential than the B reaches). All of the reaches the Cold/Cottage Creeks subarea have similar restoration potential.
- **More details about the potential projects can be found in the reach by reach project lists in Appendix G.**
- Each potential project was identified and evaluated by an ad hoc group of Bear Creek experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Habitat Restoration Recommendations that Bear Creek Ad Hoc Group felt were very important and applied to most reaches of Lower Bear, Upper Bear and Cold/Cottage Creek:

- Continue to work with private property owners to restore riparian areas, increase in-channel complexity and add large woody debris. Use King County's 1994 Bear Creek and Evans Creek Capital Improvement Program Projects report to identify specific potential projects.
- Add large woody debris. Start with areas that are already publicly owned. The WRIA 8 Technical Committee identified Reaches 8, 9 and 10 as particularly needing large woody debris. See specific recommendation in those reaches.
- Work with private property owners to reduce water quality impacts of their landscaping practices, particularly in Cold/Cottage Lake Creek and residential areas of Upper Bear Creek (i.e. Reach 13).

Lower Bear Creek Draft Prioritization of Restoration Projects (Reaches 1-7)

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
A Reaches	
Reach 5 – Evans Creek confluence to trailer park	**Very High Benefit/Easier to Implement:** Evans/Bear Creek Restoration - In-channel restoration is needed in Bear Creek and Evans Creak through the former dairy farm at the confluence; RM 1.25 to RM 2.5 on Bear Creek and RM 1.2 to RM 4.6 on Evans Creek (Same as Keller Farm). Enhance riparian area, add LWD, replant, add pools, increase off-channel complexity (oxbows, backwater areas). (Spans reaches 4 and 5)
	High Benefit/Moderately Difficult to Implement: Install buffer strips to reduce inputs of fine sediments into the creek from farm land (has been used tilled in recent years). (Spans reaches 4 and 5)
Reach 4 – Avondale Rd. to Evans Creek confluence	**Very High Benefit/Easier to Implement:** Evans/Bear Creek Restoration - In-channel restoration is needed in Bear Creek and Evans Creak through the former dairy farm at the confluence; RM 1.25 to RM 2.5 on Bear Creek and RM 1.2 to RM 4.6 on Evans Creek (Same as Keller Farm). Reconfigure channel where it has been widened due to past farm practices, enhance riparian area, add LWD, replant. (Spans reaches 4 and 5)
	High Benefit/Moderately Difficult to Implement: Install buffer strips to reduce inputs of fine sediments into the creek from farm land (has been tilled in recent years). (Spans reaches 4 and 5)
Reach 1 – Mouth to bottom of restoration area	**Very High Benefit/Easier to Implement:** Lower Bear Creek Restoration - Provide an enhanced channel alternative to the ditched and leveed lower 3,000 feet of Bear Creek, including a new refuge confluence with the Sammamish River. Add LWD, restore riparian conditions.
	High Benefit/Moderately Difficult to Implement: Add water quality treatment for stormwater runoff from freeway in this reach.
Reach 3 – RR tracks to Avondale Rd.	**High Benefit/Easier to Implement:** Riparian restoration is needed in this reach. Most of the reach is publicly owned, but need to remove invasive plants and replant.
Reach 6 – Trailer park to Cottage Lake Creek confluence	**Medium Benefit/Moderately Difficult to Implement:** Riparian restoration needed throughout Friendly Village development in downstream end of reach and equestrian center near middle of the reach.
	Medium-Low Benefit/Easier to Implement (if acquired): Reduce or remove bank armoring and restore riparian vegetation at NE 116th and Avondale Place.
Reach 7 - Cottage Lake Creek confluence to 133rd St.	**High Benefit/More Difficult to Implement:** Explore opportunities to reforest cleared areas in this reach in order to increase forest cover.

Lower Bear Creek Draft Prioritization of Restoration Projects, cont.

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
B Reaches	
Reach 2 – Restoration area to RR tracks	**Medium Benefit/Easier to Implement:** Restore 300-foot section of creek downstream of railroad bridge that was not part of past restoration efforts in this reach. Plant riparian buffer and add LWD.
	Low Benefit/Moderately Difficult to Implement: Remove constriction of channel caused by remnant of railroad bridge.

Upper Bear Creek Draft Restoration Project Prioritization (Reaches 8-15/16)

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation of Benefits to Chinook and Feasibility
Reach 16 – .5 miles above Woodinville-Duvall Rd. to Paradise Lake Reach unranked by EDT model, but important because affects all reaches downstream.	**High Benefit/Harder to Implement:** Remove invasive plants and plant riparian buffer along Bear Creek through out Paradise Valley Conservation Area.
A Reaches	
Reach 10 – Top of beaver dam complex to Struve Creek confluence	**High Benefit/Harder to Implement:** Add LWD to this reach. There are some publicly-owned lands in the reach which may be a more feasible place to start. The WRIA 8 Technical Committee gives the following guidance: approximately 170 pieces of LWD (>2 m. in length, >10 cm. in diameter) would need to be placed to meet Best Prevailing Conditions (380 pieces/km) and WA State Forestry Board conditions of 2 pieces per channel width. Among these 170 pieces, 75 pieces should/could be “key” pieces meeting WA Forestry Practices Board definition of “key pieces,” 2.5 m3. In terms of an actual restoration project or approach, a focus on placing only “key” pieces might be advisable given the short- and longer-term potential for the Bear/Cottage creeks buffers to supply smaller woody debris.
	Medium Benefit/Easier to Implement: On already protected properties in reach, underplant existing alder stands with conifers.

Upper Bear Creek Draft Restoration Project Prioritization, cont.

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation of Benefits to Chinook and Feasibility
Reach 9 – 141st to top of beaver dam complex	**High Benefit/Harder to Implement:** Add LWD to this reach. The WRIA 8 Technical Committee gives the following guidance (recommendation spans reaches 8 and 9): approximately 380 pieces of LWD (>2 m. length, >10 cm. diameter) would need to be placed to meet Best Prevailing Conditions (380 pieces/km), WA State Forest Board conditions of 2 pieces per channel width. Among these 380 pieces, 140 pieces should/could be "key" pieces meeting WA Forest Practices Board definition of "key pieces," 2.5 m3. In terms of an actual restoration project or approach, a focus on placing only "key" pieces might be advisable given the short- and longer-term potential for the Bear/Cottage creeks buffers to supply smaller woody debris.
	High Benefit/Harder to Implement: Replant cleared, former pasture area in reach. Area is wetland so plant with appropriate trees for wetland environment (e.g. black cottonwood).
Reach 8 – 133rd St. to 141st crossing	**High Benefit/Moderately Difficult to Implement:** Restoration needed on Swanson Horse Farm property on NE 140th St. Reduce fine sediments, restore riparian areas. Pursue farm plan to address impacts to Bear Creek.
	High Benefit/Moderately Difficult to Implement: Determine whether or not ponds on golf course are hydrologically connected to Bear Creek and source of warm water. If found to add to temperature problems on the creek, recommend planting south side of ponds to shade them.
	High Benefit/Harder to Implement: Add LWD to this reach. There are some publicly-owned lands in the reach which may be a more feasible place to start. The WRIA 8 Technical Committee gives the following guidance (recommendation spans reaches 8 and 9): approximately 380 pieces of LWD (>2 m. length, >10 cm. diameter) would need to be placed to meet Best Prevailing Conditions (380 pieces/km), WA State Forest Board conditions of 2 pieces per channel width. Among these 380 pieces, 140 pieces should/could be "key" pieces meeting WA Forest Practices Board definition of "key pieces," 2.5 m3. In terms of an actual restoration project or approach, a focus on placing only "key" pieces might be advisable given the short- and longer-term potential for the Bear/Cottage creeks buffers to supply smaller woody debris.
	High Benefit/Moderately Difficult to Implement: Reforest 10-acre wetland on golf course in reach that is part of dedicated open space for property.

Upper Bear Creek Draft Restoration Project Prioritization, cont.

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation of Benefits to Chinook and Feasibility
Reach 14 – Top end of beaver dam complex to .5 miles above Woodinville-Duvall Rd.	**High-Medium Benefit/Easier to Implement:** Riparian planting in wetland area on the south side of Woodinville Duvall Road.
B Reaches	
Reach 13 – 160th to top end of beaver dam complex	**Medium Benefit/Moderately Difficult to Implement:** Work with private property owners in reach to reduce water quality impacts of their landscaping practices.
Reach 11 – Struve Creek to 158th crossing	**Medium Benefit/Easier to Implement:** Remove bank hardening and restore riparian area at Tolt Pipeline crossing.

Cottage/Cold Creeks Draft Restoration Project Prioritization

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation of Benefits to Chinook and Feasibility
A Reaches	
5/6, 1/2 Cold Creek - reaches unranked by EDT model, but important because affects all reaches downstream.	**Medium Benefit/Easier to Implement:** Portion of Cold Creek Natural Area is an altered bog in need of restoration. (Spans 5/6 Cottage Lake Creek and 1/2 Cold)
4	No site-specific projects were identified. Basinwide recommendations apply to this reach.
3	**High Benefit/Harder to Implement:** Work with private property owners upstream of Native Growth Protection Easements in reach to restore riparian buffers.
	Medium Benefit/Moderately Difficult to Implement: Explore opportunities to reforest cleared properties in reach, particularly in open space tracts.
1	**High Benefit/Harder to Implement:** Explore opportunities to improve floodplain connection in reach by removing riprap or artificial constrictions.
2	**High Benefit/ Harder to Implement:** Restore riparian conditions along Cottage Lake Creek on Nickels Farm. Reduce fine sediment inputs from equestrian area.

Sammamish River Draft Project Prioritization

About the following list of potential protection and restoration projects:

- **The river reaches are listed in the order of their restoration potential according to the EDT model results.** The habitat diversity index for protection ranking of reaches was not developed for the Sammamish River due to the low number of protection opportunities.
- **More details about the potential projects can be found in the reach by reach project lists in Appendix G.**
- Each potential project was identified and evaluated by an ad hoc group of Sammamish River experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Sammamish River Draft Prioritization of Protection Projects (reaches were not prioritized for protection):

Reach #	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
Reach 4B - Willow Golf Course to NE 116th St.	**High Benefit/Moderately Difficult to Implement:** Acquire Property Across from Willows Run Golf Course: Acquire 20-acre parcel on right bank across from Willows Run Golf Course for floodplain and wetland restoration.
Reach 6B - Lake Sammamish to Weir	**High-Medium Benefit/Easier to Implement:** Protect existing high quality riparian vegetation in reach 6B. Includes Marymoor dogwalk and Lake Sammamish Rowing areas. Do not encourage recreational use of left bank.
Reach 1B - 96th St Bridge to 68th St. Bridge	**High-Medium Benefit/Easier to Implement:** Acquire Undeveloped Property at Mouth of Swamp Creek: Purchase parcel to the east of Swamp Creek Regional Park for inclusion in NTAA Project #15 Swamp Creek Regional Park Wetland and Stream Restoration (described above).

Sammamish River Draft Prioritization of Restoration Projects (Reaches 1-6)

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Reach 6 - Lake Sammamish to Bear Creek Confluence Unranked because primarily used by Issaquah population. Placed as top priority by WRIA 8 Technical Committee because affects all reaches downstream.	**High Benefit/Easier to Implement:** Enhance mouths of two unnamed tributaries in reach. Add LWD to create a pool at mouths and encourage emergent vegetation. Explore restoration of tributaries to reduce urban runoff into Sammamish River and induce cooler temperatures.
	High Benefit/Easier to Implement: Restore Transition Zone - Restoration of the left meander (Marymoor meander) below the weir as either the main channel or a seasonal channel with wetlands is recommended. Reroute tributary 04 into wetland. Enhance or create pools at small tributary outlets, at meander bends downstream of the transition zone, and just downstream of the weir. Restoration elements could include excavation of new channel, creation of pools, and an overflow bench with wetland vegetation; removal of non-native vegetation; placement of gravel substrate in new channel; connection to capture hyporehic flows; and revegetation of riparian and wetland areas with native plants.
	High Benefit/Easier to Implement: Enhance Existing Pools and Create New Pools: Create new pools at mouth of recently rerouted tributary on the south side of Marymoor Way and just upstream of the entrance bridge.
	High Benefit/Moderately Difficult to Implement: Regrade Banks and Create Flood Benches: Opportunities in this reach to regrade banks, create flood benches at or below high-water mark, and plant banks and benches with native vegetation are near the Marymoor Park entrance. It is very shallow at bridge. Additional pools should be created downstream of the Marymoor Park entrance road on the outside of the meander bend.
	High-Medium Benefit/Easier to Implement: Riparian Revegetation Between Lake Sammamish and Weir: Continue and expand projects such as Sammamish Re-Leaf and Redmond River Walk to plant early successional riparian vegetation to provide shade. Property is all under public ownership, and future plans for a second trail near this reach of river would provide good opportunities for riparian restoration.
	Medium Benefit/Easier to Implement: Riparian Revegetation between Weir and Confluence of Bear Creek: A lot of riparian restoration has been done by King County and the City of Redmond in reach 6A. Continue to enhance, maintain, and expand areas of revegetation to provide shade. Control invasive vegetation.

Sammamish River Draft Prioritization of Restoration Projects, cont.

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Reach 2 - North Creek Confluence (RM 4.5) to 96th St Bridge (RM 2.5)	**Medium Benefit/Easier to Implement:** Explore Restoration Opportunities at Minor Tributaries (Tributaries 0057A, 0068, and 0069) and Enhance Tributary Confluences - Projects should include as appropriate correction of fish passage barriers, riparian restoration, placement of large woody debris, and creation of cool-water refuge pools. Some restoration work has been done already on Tributary 0057(Horse Creek) but additional measures may be warranted to create a cool-water refuge.
	Medium Benefit/Easier to Implement: Enhance and Reconnect Riparian Wetlands and remnant side channels adjacent to 102nd Avenue bridge on left bank.
	Medium Benefit/Moderately Difficult to Implement: Wetland Restoration on Right Bank in Bothell - restore historic wetlands on right bank downstream of 102nd Avenue bridge to be seasonally inundated wetlands with small channels connecting them to the river.
	Medium Benefit/Moderately Difficult to Implement: Norway Hills Enhancement: Evaluate creation of pools in the Norway Hill area of the river where some groundwater sources are piped to the river as part of the stormwater system. Determine if groundwater inflows at Norway Hill are in need of special protection or mitigation.
Reach 1 - 96th St Bridge to Sammamish Mouth	**High Benefit/Easier to Implement:** LakePointe Property Riparian and Aquatic Restoration - 45 acre property on Lake Washington at right bank of Sammamish River mouth is targeted for cleanup of hydrocarbons and other pollutants. Restore shoreline as part of redevelopment.
	High Benefit/Easier to Implement: Sammamish River Mouth Wetland Restoration - restore wetlands on King County property near mouth and on island.
	High-Medium Benefit/Easier to Implement: Enhance and Reconnect Riparian Wetlands at Wildcliff Shores: Enhance and reconnect riparian wetlands to river at Wildcliff Shores, across from Swamp Creek. Restore riparian vegetation.
	High-Medium Benefit/Moderately Difficult to Implement: Swamp Creek Regional Park Wetland and Stream Restoration: Restore large, publicly owned wetland complex at the confluence of Swamp Creek and the Sammamish River, creating a diversity of wetland elevations and habitats in the floodplain.

Sammamish River Draft Prioritization of Restoration Projects, cont.

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Reach 5 - Willow Golf Course to Bear Creek Confluence	**Very High Benefit/Moderately Difficult to Implement:** Lower Bear Creek Restoration and Pool Creation: restore lower 2/3 mile of Bear Creek to its confluence with the river. This process will include placement of large woody debris in the river upstream of the confluence to create a cold-water refuge pool and delay mixing of warm river water with much cooler water from Bear Creek.
	High Benefit/Moderately Difficult to Implement: Regrade Banks, Create Shallow Rearing Habitat, and Restore Riparian Vegetation: regrade banks, create flood benches at or below high-water mark, and plant banks and benches with native vegetation. Particular focus should be given to the upper river (RM 11 to RM 13.6) and downstream of the major tributaries. An "emerging" bench/ wetland would provide juvenile salmon shallow rearing habitat. Explore lowering benches from earlier restoration projects (e.g. Mammoth Sammamish north of Willows Creek on west side and Willows Creek outfall). Include riparian revegetation for entire reach but only regrading from NE 90th to NE 100th.
	High-Medium Benefit/Moderately Difficult to Implement: Enhance Tributary Confluences: Enhance tributary confluences with Sammamish River at Willows Creek (# 0102) and Peters Creek (#0104). At Willows Creek: enhance pool at mouth to be more natural, control invasive vegetation, and lower floodplain bench. At Peters Creek: improve fish passage at weir, create pool at mouth and add LWD to create a cool-water refuge pool area.
Reach 3 – NE 145th to North Creek Confluence	**High Benefit/Moderately Difficult to Implement:** Regrade Banks, Create Shallow Rearing Habitat, and Restore Riparian Vegetation: regrade banks, create flood benches at or below high-water mark, and plant banks and benches with native vegetation. Particular focus should be given to the upper river (RM 11 to RM 13.6) and downstream of the major tributaries. An "emerging" bench/ wetland would provide juvenile salmon shallow rearing habitat.
	High-Medium Benefit/Easier to Implement: Enhance Tributary Confluences of Derby, Gold and Woodin Creeks: Enhance Derby Creek confluence. Project should include as appropriate correction of fish passage barriers, riparian restoration, placement of large woody debris, and creation of cool-water refuge pool. Fish passage improvements and riparian restoration has already been done on Gold and Woodin Creeks, create pools at mouths for cool water refuge.
	High-Medium Benefit/Harder to Implement: Enhance and Reconnect Riparian Wetlands: Enhance and reconnect riparian wetlands to river at the historic wetland and meander area near Gold Creek.
	Medium Benefit/Harder to Implement: Restore and Reconnect Riparian Wetlands Adjacent to I-405/SR 522 Interchange at the publicly owned historic wetland area.

Reaches Prioritized by Restoration Potential	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Reach 4 - Willow Golf Course to NE 145th St.	**High Benefit/Easier to Implement:** Enhance tributary confluences with Sammamish River at Tributary 0095 A, left bank Tributary 0095 (misnamed), and Tributary 0096: Restore riparian vegetation, improve connection of tributary to the river, enhance the mouths and create cool water refuge pools. Trib. 0095B has had substantial work done as part of the 124th Street mitigation.
	High Benefit/Moderately Difficult to Implement: Reconnect Wetland 38 - Reconnect wetland 38 to the Sammamish River. Wetland 38 is located at the south end of the City of Woodinville on the Redhook Brewery site.
	High Benefit/Harder to Implement: Wetland Restoration and Side Channel Restoration on Right Bank across from Willows Run Golf Course: restoration elements could include removal of non-native vegetation, excavation of side channel, and placement of LWD in channel. Enhance and reconnect riparian wetlands to river. Explore remeandering river at this location.
	High Benefit/Harder to Implement: Restore Full Meander in Reach 4A with a connection to alluvial fan. Restore riparian vegetation.
	High-Medium Benefit/Easier to Implement: Riparian Restoration between Willows Golf Course and NE 116th: Restore riparian vegetation in remainder of reach 4B and remove invasives. One-third to one-half of vegetation already restored on left bank.
	High-Medium Benefit/Moderately Difficult to Implement: Restore Small Meanders and Riparian Restoration – Reach 4A is the most straightened reach of the river. Explore restoration of small meanders (similar in scale to Redmond River Walk Project) and regrade. Then restore riparian vegetation.
	Medium Benefit/Moderately Difficult to Implement: Enhance Tributary 0101 Confluence: Replace culvert with bridge. Explore adding LWD, pool, and riparian vegetation to create cool-water refuge areas at Tributary 0101.
	Medium-Low Benefit/Harder to Implement: Explore restoration of historic channel habitat - reconnect historic side channel to river on left bank between 116th and 124th and restore riparian vegetation.
	Medium-Low Benefit/Harder to Implement: Wetland Restoration in Willows Run Golf Course - Explore opportunities for reconnection of wetlands/ponds with river.

Issaquah Creek Draft <u>Protection</u> Project Prioritization

About the following list of potential protection projects:

- **There are separate project lists of potential protection projects for Lower Issaquah Creek, Middle Issaquah Creek, Carey/Holder Creeks, North Fork, East Fork and Fifteenmile Creek.** As described in Chapter 4, actions need to be taken in all of these "Tier I" areas for the Issaquah Chinook population.
- **Potential habitat restoration projects have been identified for Issaquah Chinook population, but have not been prioritized.** The WRIA 8 Steering Committee directed that potential restoration projects for the Issaquah population be identified but not prioritized until additional data has been collected and analyzed regarding the genetics of WRIA 8's Chinook populations because this analysis is likely to affect the prioritization of these restoration projects.
- **For a reach by reach list of potential restoration projects and basinwide restoration recommendations, and for more details about the potential protection projects see Appendix H.**
- The reaches are given in the order of which reaches are closest to template conditions in terms of large woody debris, riparian conditions and channel connectivity (these attributes are important for creating a diversity of habitats that can be used by key Chinook life stages). This prioritization of the reaches was developed using the "habitat diversity index" in the EDT modeling results.
- **The "Existing Protection Priority"column indicates whether or not a potential project has been identified as a priority in an existing science-based habitat protection program – in this case the Issaquah Creek and Lake Sammamish Waterways Program. Potential habitat protection projects that are a priority for the Issaquah Creek and Lake Sammamish Waterways program have a "Yes" in this column and have been shaded.**
- Each potential project was identified by an ad hoc group of Issaquah Creek experts. **However, these projects were not evaluated for their Benefit to Chinook and Feasibility. Therefore the protection projects are not prioritized within the reaches.** These projects will be further evaluated before the next draft of the WRIA 8 salmon conservation plan is published.
- **In setting protection priorities, decision-makers should use the reach prioritization, AND whether or not the project was already identified as priority by the Issaquah Creek Waterways program.**
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Habitat Protection Recommendations that Issaquah Creek Ad Hoc Group felt were very important:

- Stream Buffer Protection: Work with private property owners throughout watershed to develop PBRS or easements to increase stream buffer protection.
- Public Land Consolidation: Review publicly owned land with commercial potential and consider opportunities for selling/trading for land with higher ecological value to increase protection of riparian corridor along Issaquah Creek and its tributaries.
- Forest Cover Protection: Protect existing natural flow regime in the headwaters areas of Mainstem Issaquah Creek and its tributaries.

These general recommendations should lead to site-specific project recommendations in the future.

Lower Issaquah Creek Draft Protection Project Prioritization

Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
Reaches 7 & 9 Tied for 1st in Habitat Diversity Index		
Reach 7: Water Intake Fish Ladder to Trib. 0199	Yes	**Additional South Issaquah Creek Greenway Acquisitions:** Including Fowler Site, Mohl Property and other properties.
Reach 9: Power line crossing to 15 Mile Creek	No	**Stream Buffer Protection:** Work with private property owners specifically in this reach to develop PBRS or easement to increase stream buffer protection.
Reaches 1 & 2 Tied for 2nd in Habitat Diversity Index		
Reach 1: Mouth to confluence with North Fork	No	**Sammamish State Park Development Protection:** Several proposals exist pertaining to planned park development. Ensure that the final park development plan adequately protects floodplain/riparian processes.
Reach 2: Confluence with North Fork to I-90 Bridge	Yes	**Bush Lane Properties**, 12.5 acres of floodplain lying between Issaquah Creek and North Fork Issaquah Creek. Includes 1200 feet of east bank of Issaquah Creek and 900 feet of North Fork Issaquah Creek.
Reaches 6, 8 & 10 Tied for 3rd in Habitat Diversity Index		
Reach 6: Fish Hatchery Weir to Hatchery Water Intake Fish Ladder	Yes	**Wildwood Blvd Trail**, located Between Wildwood Trail and Issaquah Creek along Wildwood Blvd Trail to hatchery intake dam. Project would consolidate City ownership of property along west bank using boundary line adjustments.
	Yes	**"Guano Acres"**. Acquisition of one of the few remaining large undeveloped parcels (8 acres) on lower Issaquah Creek.

Lower Issaquah Creek Draft Protection Project Prioritization, cont.

Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
Reach 10: Confluence with 15 Mile Creek to confluence with McDonald Creek	No	**Stream Buffer Protection:** Work with private property owners specifically in this reach to develop PBRS or easement to increase stream buffer protection
Reaches 3, 4 & 5 Tied for 4th for Habitat Diversity Index		
Reach 3: I-90 Bridge to Juniper St.	Yes	**Streamside Property Downstream of Juniper St.,** Acquisition of 5 acres for future restoration site.
Reach 4: Juniper St. to confluence with East Fork	Yes	**Streamside Property Upstream of Juniper St.,** Acquisition of one of the few remaining undeveloped parcels (2 acres) on lower Issaquah Creek.
	Yes	**Anderson Property,** located at confluence of Issaquah Creek and East Fork Issaquah Creek.

Middle Issaquah Creek Draft Protection Project Prioritization

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
1	Reach 11: McDonald Creek to Cedar Grove Rd	Yes	**Habitat Protection:** Continue to implement Issaquah Creek Waterways Program to protect best remaining habitat including Mainstem Issaquah Creek/Log Cabin Reach (RM 8.4-10, 155 acres).
2	Reach 12: Cedar Grove Rd to confluence with Holder and Carey Creeks	Yes	**Habitat Protection:** Log Cabin Expansion: Acquire additional undeveloped parcels adjacent to the Log Cabin acquisitions. There are several large parcels that could be protected.
		Yes	**Habitat Protection:** Continue to implement Issaquah Creek Waterways Program to protect best remaining habitat including Issaquah Mainstem (SE 156th Street to 252nd Avenue SE).
		Yes	**Carey/Holder/Issaquah Creek Confluence**: 120-acre site proposed for a conservation easement. Plan includes increased fenced buffers. Same project in Reach 12.

Carey/Holder Creeks Draft Protection Project Prioritization

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
1	Holder Reach 2: 276th St to change in gradient	Yes	**Habitat Acquisition:** Acquire 80-acre inholding in Taylor Mountain Forest.

Carey/Holder Creeks Draft Protection Project Prioritization, cont.

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
2	Carey Reach 4: Taylor Ditch confluence to falls	Yes	**Habitat Protection:** Continue to implement the Issaquah Waterways program to protect best remaining habitat from the confluence with Issaquah Creek to Taylor Mountain.
		No	**Forest Cover Protection:** Protect existing natural flow regime in the headwaters areas of Carey and Holder creeks, which are in the Tiger Mountain State Forest and Taylor Mountain County Forest vicinity, by acquiring forest property, development rights/conservation easements. Also, provide enhanced incentives to retain and plant forest area environments.
3	Holder Reach 3: Change in gradient to SR 18	Yes	**Habitat Protection:** Continue Issaquah Creek Waterways Program to protect best remaining habitat, particularly in Holder Creek (inholding on Taylor and Tiger mountains).
			Forest Cover Protection: Protect existing natural flow regime in the headwaters areas of Carey and Holder creeks, which are in the Tiger Mountain State Forest and Taylor Mountain County Forest vicinity, by acquiring forest property, development rights/conservation easements. Also, provide enhanced incentives to retain and plant forest area environments.
Carey Reaches 1, 2 ,3 & Holder 1 Tied for 4th in Habitat Diversity Index			
4	Carey Reach 1: Mouth to 276th St	Yes	**Carey/Holder/Issaquah Creek Confluence**: 120-acre site proposed for a conservation easement. Plan includes increased fenced buffers.
		Yes	**Habitat Protection:** Continue to implement Issaquah Creek Waterways Program to protect best remaining habitat, particularly, Carey Creek RM 0-Highway 18.
		Yes	**Habitat Protection:** Continue to implement Issaquah Creek Waterways Program to protect best remaining habitat, particularly, Carey Creek Highway 18 to Issaquah-Hobart Road.

Carey/Holder Creeks Draft Protection Project Prioritization, cont.

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
	Carey Reach 1 cont.	Yes	**Habitat Protection:** Continue to implement the Waterways program to protect best remaining habitat from the confluence with Issaquah Creek to Taylor Mountain.
4	Carey Reach 2: 276th St to 204th	Yes	**Habitat Protection:** Continue to implement the Waterways program to protect best remaining habitat from the confluence with Issaquah Creek to Taylor Mountain.
4	Carey Reach 3: Taylor Ditch confluence to falls	Yes	**Habitat Protection:** Continue to implement the Waterways program to protect best remaining habitat from the confluence with Issaquah Creek to Taylor Mountain.
		No	**Forest Cover Protection:** Protect existing natural flow regime in the headwaters areas of Carey and Holder creeks, which are in the Tiger Mountain State Forest and Taylor Mountain County Forest vicinity, by acquiring forest property, development rights/conservation easements. Also, provide enhanced incentives to retain and plant forest area environments.
4	Holder Reach 1: Mouth to 276th St.	Yes	**Carey/Holder/Issaquah Creek Confluence**: 120-acre site proposed for a conservation easement. Plan includes increased fenced buffers.

Fifteen Mile Creek Draft Protection Project Prioritization

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
1	Reach 2: Issaquah-Hobart Rd to 240th St	No	**Forest Cover Protection:** Acquire additional forested areas along Fifteenmile Creek.
2	Reach 1: Mouth to Issaquah-Hobart Rd	No	**Forest Cover Protection:** Acquire additional forested areas along Fifteenmile Creek.

North Fork of Issaquah Creek Draft Protection Project Prioritization

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
1	Reach 1: Mouth to 64th St culvert	Yes	**Bush Lane Properties**, 12.5 acres of floodplain lying between Issaquah Creek and North Fork Issaquah Creek. Includes 1200 feet of east bank of Issaquah Creek and 900 feet of North Fork Issaquah Creek.
2	Reach 3: 66th St to bottom of ravine	Yes	**Headwater Wetland Protection:** Protect the valuable headwater wetlands in this basin.

East Fork of Issaquah Creek Draft Protection Project Prioritization

Reach Priority based on EDT Habitat Diversity Index	Reach #	Existing Protection Priority? (Issaquah Creek Waterways)	Potential Project Description
1	Reach 3: I-90 crossing to High Point	Yes	**Forest Cover Protection:** Acquire additional forested areas along the East Fork.
2	Reach 2: Front St Bridge to I-90 crossing	Yes	**Forest Cover Protection:** Acquire additional forested areas along East Fork.
3	Reach 1: Mouth to Front St Bridge	Yes	**Anderson Property,** located at confluence of Issaquah Creek and East Fork Issaquah Creek.
		Yes	**Forest Cover Protection:** Acquire additional forested areas along East Fork.

Locks/Ship Canal Draft Potential Project Prioritization

About the following list of potential projects:

- **The Locks/Ship Canal reaches have not been prioritized.** The WRIA 8 Technical Committee did not feel that enough is known about how Chinook use the Locks/Ship Canal to prioritize the Locks/Ship Canal reaches at this time.
- **More details about the potential projects can be found in the reach by reach project lists in Appendix I.**
- Each potential project was identified and evaluated by an ad hoc group of WRIA 8 Locks/Ship Canal experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. **The Locks/Ship Canal projects have been prioritized based on this qualitative ranking by the ad hoc group of Locks/Ship Canal experts.** The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Recommendations that Locks/Ship Canal Ad Hoc Group felt were important and can be applied throughout the Locks/Ship Canal:
Project related:

- Explore opportunities for shoreline/riparian vegetation opportunities (but be careful not to create overwater and inwater structures that could form bass habitat).
- Work with shoreline businesses, shipyards, marinas, and property owners to reduce water pollution (shoreline "steward" person).
- Improve monitoring and enforcements of existing water quality regulations. This does not necessarily have to be through a threatening presence, but could be through outreach/education.
- Develop and/or advertise BMPs for houseboats and liveaboards. Also assess the extent/impact of heat-pump water temperature alterations.
- Reduce the number of toxic pilings in the subarea and encourage the use of non-toxic pilings (steel and concrete). Also reduce use of treated material in docks and other overwater structures.

Notes on evaluation:

- Water temperature and quality are recognized as the primary threats to Chinook in this subarea. Projects that address these threats receive higher ratings as a result.
- There are many potential vegetation restoration projects throughout the subarea at the various street ends and other similar small sites. These projects are individually very small.

Locks/Ship Canal Draft Restoration Prioritization

Reaches of Locks/Ship Canal	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Ship Canal Locks	**High Benefit/Easier to Implement:** Add/Replace strobe lights to locks to deter smolts and prevent entrainment.
Ship Canal Locks	**High Benefit/Harder to Implement:** Improve estuary conditions upstream of locks: Modify the salt water barrier to let salt water in through the locks to cool water above locks, and create a longer estuary environment. Project should also be accomplished by moving the salt water drain upstream to the West end of the Freemont Cut.
Ship Canal Locks	**High Benefit/Harder to Implement:** Locks Natural Estuary: Construct a more natural, fairly wide and long channel at the Locks facility that would allow both adult and juvenile fish to move back and forth between warmer lake outflow and cooler tidal water, and allow tidal change to inundate areas designed into the channel where both adults and juveniles could find refuge to hold and choose their preferred salinity.
Ship Canal Locks	**Medium Benefit/Easier to Implement:** Further reduce lockage speed for large locks to reduce smolt entrainment in filling culverts.
Fremont Cut to Portage Bay	**Medium Benefit/Easier to Implement:** Remove North Lake Union In-Water Structures: Project would remove in-water structures and debris (sunken boats, refrigerators, shopping carts, etc.) to reduce habitat for bass and other predators from the Freemont Cut to the Montlake Cut.
Ballard locks to start of Freemont Cut	**Medium Benefit/Moderately Difficult to Implement:** Ballard Bridge Water Quality Improvements: Project could be combined with the above project to treat water on site at the proposed vegetation site with bioswales.
Portage Bay	**Medium Benefit/Moderately Difficult to Implement:** Explore ways to reduce predation in Portage Bay.
Lake Union (Freemont Cut to University Bridge)	**Medium-Low Benefit/Moderately Difficult to Implement:** South Wallingford Drainage Improvements: Groundswell NW, Seattle Public Utilities and a community group working on a plan to address water quality and drainage problems along Northlake Way from Stone Way to I-5. Project may be combined with street end revegetation projects.
Gasworks Park	**Medium-Low Benefit/Harder to Implement:** Bank Softening and Revegetation at Gasworks Park: Large area for potential shoreline restoration including bank softening and revegetation.
University Bridge	**Low Benefit/Easier to Implement:** 7th Ave Street End Park Creation: Pro-Parks Levy project. Potential for shoreline restoration to go along with park establishment.
Ship Canal Locks	**Low Benefit/Easier to Implement:** Fish Ladder Improvements: Improve downstream entrance to the fish ladder with a telescoping weir and a horizontal gate. Close the slot on the downstream end to concentrate the flow.

Locks/Ship Canal Draft Restoration Prioritization, cont.

Reaches of Locks/Ship Canal	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Ballard locks to start of Freemont Cut (Salmon Bay)	**Low Benefit/Easier to Implement:** Ballard Bridge Shoreline Restoration: Potential habitat restoration/public access area under the Ballard Bridge. The potential exists to connect the project with a small green space created privately just to the west of site, and the Seattle Central Community College Marine Technology center's landscaped shoreline to the east.
Freemont Cut	**Low Benefit/Moderately Difficult to Implement:** 99 Bridge Shoreline Restoration: Remove riprap and restore vegetation under the 99 bridge on the north side of the Lake near the Adobe property.
Fremont Cut	**Low Benefit/Harder to Implement:** Demonstration Project at Fremont Bridge: Work with U.S. Army Corps of Engineers to construct a demonstration project on federal lands West of the Fremont Bridge, where there is an area available for bank re-sloping, addition of native vegetation, and rock removal. Hypothetically, this would provide a refuge site for migrating juveniles.
Ship Canal Locks	**Uncertain Benefit/Uncertain Difficulty:** Add fishway lighting for the ladder.
Ship Canal Locks	**Uncertain Benefit/Harder to Implement:** Explore needs/options for "Low Elevation" smolt passage at locks: Project would consider structural options for smolt passage at times when water levels are insufficient for the smolt slides.
Montlake Cut	**Uncertain Benefit/Harder to Implement:** Explore options for deepening the Montlake Cut to allow colder water from Lake Washington to flow in Lake Union.

Nearshore Draft Potential Project Prioritization

About the following list of potential projects:

- **The Nearshore reaches have not been prioritized.** The WRIA 8 Technical Committee did not feel that enough is known about how Chinook use the Nearshore to prioritize the Nearshore sections at this time.
- **More details about the potential projects can be found in the reach by reach project lists in Appendix I.**
- Some of the habitat protection projects were previously identified as priorities for protection by the Snohomish County Marine Resources Advisory Committee. These projects are shaded in gray in the potential protection project table.
- Each potential project was identified and evaluated by an ad hoc group of WRIA 8 Nearshore experts for their Benefit to Chinook and Feasibility. For criteria used for defining Benefit to Chinook and Feasibility, see Appendix K, *Process and Criteria for Reviewing Potential Site-Specific Projects*. **The Nearshore projects have been prioritized based on this qualitative ranking by the ad hoc group of Nearshore experts.** The evaluation of projects was done with incomplete knowledge and information, however it is pertinent information for decision-making.
- **How Feasibility evaluation was reflected in draft prioritized lists:**
  - High or High-Medium Feasibility = "Easier to Implement" and is expected to be implemented in a shorter time frame.
  - Medium Feasibility rating = "Moderately Difficult to Implement"
  - Medium-Low or Low Feasibility = "Harder to Implement" and is expected be implemented in a longer time frame.
- Some potential projects have an uncertain Benefit to Chinook or uncertain Feasibility because the area experts felt that more research/information was needed before the project's benefit could be evaluated.
- As requested by the WRIA 8 Steering Committee, no projects have been removed from the lists in the appendices at this time. There are projects that are recommended for removal from the list either because of lack of benefit to Chinook or because projects have already been implemented.

Basinwide Recommendations that Nearshore Ad Hoc Group felt were important and can be applied throughout the Nearshore:

Project related:

- Explore opportunities for riparian restoration.
- Explore opportunities for piling removal.

Research related:

- Explore bluff sloughing as sediment source (King County is working on this).
- Examine the shoreline for locations to allow natural beach and bluff erosion to occur among the hardened Burlington Northern Railroad track right away. Study should focus on current processes shaping the beach and the intertidal zone and out to include eelgrass beds and other like features.
- Explore Woodway slide sediment transport.
- Consider using dredged materials from Snohomish and elsewhere to conduct beach nourishment projects.

Nearshore Draft Protection Prioritization

Reach #	Existing Protection Priority?	Potential Project Description and Evaluation of Benefits to Chinook and Feasibility
Reach 10A: Edwards Point to Meadow Point	No	**Medium Benefit/Moderately Difficult to Implement:** Point Wells North Habitat Acquisition: Acquisition and protection of a very small (~ 1 acre) remnant piece of marine riparian habitat exists on the north side of Point Wells. Despite the proximity to the Point Wells site, it would be a valuable piece to protect. Approx. 850 ft of shoreline.
Sub-Reach 9.04: Lunds Gulch	Yes	**Medium Benefit/Hard to Implement:** Meadowdale Marina Acquisition and Removal: Acquire and remove the dilapidated marina structure. The site is a total of 2.17 acres, with the buildings/wharfs representing approx. 1.7 acres of over-water structures.
Sub-Reach 8.05: Big Gulch	No	**Medium Benefit/Hard to Implement:** Shipwreck/Hulk Creek Acquisition - Acquisition and restoration of former shipyard site. Property is currently privately owned. Approximately 1,000 ft. of shoreline restoration potential.
Reach 10A: Edwards Point to Meadow Point	Yes	**Medium-Low Benefit/Moderately Difficult to Implement:** Deer Creek Habitat Acquisition: Preserve the existing riparian vegetation, stream outfalls, and unmodified shoreline along the southern portion of the Deer Creek outfall area.

Nearshore Draft Restoration Prioritization

Sections of Nearshore	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Sub-Reach 9.15: Willow Creek	**High Benefit/Easier to Implement:** Willow Creek Daylighting: Proposed mitigation project for nearby "Edmonds Crossing" development (including new ferry terminal). Daylighting creek through existing fuel pier (using box culverts) will improve connectivity with the Willow Creek Marsh, one of the largest remaining marsh areas in the WRIA 8 nearshore.
Sub-Reach 9.15: Willow Creek	**High Benefit/Harder to Implement:** Point Wells Complete Site Restoration: Restore the entire Point Wells site by completely removing the sea wall, riprap, dike, and fill. Regrade the site and reconnect local freshwater sources to re-create a tidal lagoon system with an opening at the north end of the point, which was probably the original mouth of the tidal lagoon system. Reestablish native riparian and backshore vegetation.
Reach 12: North Discovery Park to West Point	**High Benefit/Harder to Implement:** Shilshole Bay South Buyout and Restoration: Project would buy out homes on the south side of Shilshole Bay, demolish the homes and restore the nearshore. This area extends from the "Dolphin 8" buoy to points south. All of these homes and their hardened shorelines are affecting the shallow water migration corridor, feeding area, etc.

Nearshore Draft Restoration Prioritization, cont.

Sections of Nearshore	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Reach 10A: Edwards Point to Meadow Point	**High-Medium Benefit/Easier to Implement:** Woodway Tidal Lagoon North: Potential culvert improvement project at an inter-tidal lagoon and mud flat where railroad was built offshore South of willow creek.
Reach 10A: Edwards Point to Meadow Point	**High-Medium Benefit/Easier to Implement:** Deer Creek Restoration or Culvert Replacement: Enhance the connectivity of Deer Creek and the associated estuarine wetland with the nearshore by replacing the two concrete culverts with an oversized culvert or a trestle bridge. Sound Transit will be conducting some mitigation at this site for proposed track improvements including either vegetation enhancement OR the replacement of the existing culvert with a trestle.
Sub-Reach 8.05: Big Gulch	**High-Medium Benefit/Moderately Difficult to Implement:** Big Gulch Culvert Replacement: Replacement of the undersized culvert under the railroad with a trestle system to restore system connectivity and improve sediment transport into the nearshore.
Reach 10A: Edwards Point to Meadow Point	**High-Medium Benefit/Harder to Implement:** South Point Wells Habitat Restoration: Enhance the south shoreline by removing riprap dike, eliminating invasive plants, and reestablishing native riparian and backshore vegetation.
Reach 10A: Edwards Point to Meadow Point	**High-Medium Benefit/Harder to Implement:** South Point Wells Lagoon Creation: Creation of a three acre inter-tidal lagoon at the south end of the Point Wells site that may have historically been a marsh (before it was filled).
Reach 10A: Edwards Point to Meadow Point	**High-Medium Benefit/Harder to Implement:** Richmond Beach North Property Acquisition: Acquisition, demolition, and restoration of shoreline where numerous (30+) homes that are built in the nearshore north of Richmond Beach park.
Reach 11: Shilshole to Locks (Estuary Reach)	**High-Medium Benefit/Harder to Implement:** Commodore Park and Wolf Creek Restoration: Explore feasibility of habitat restoration at Commodore Park, located immediately downstream of the Hiram M. Chittenden Locks on the south bank. Purpose of the project would be to increase the limited high-quality rearing/refuge habitat for millions of salmon smolts that migrate through and use this area as a critical transition between freshwater and saltwater. Armored seawall should be removed and restored to a more gentle vegetated slope. Project could be combined with daylighting of Wolf Creek to create a pocket estuary downstream of the locks.
Sub-Reach 9.15: Willow Creek	**Medium Benefit/Easier to Implement:** Willow Creek Pier Removal: Demolition of existing pier as part of mitigation for new ferry terminal.

Nearshore Draft Restoration Prioritization, cont.

Sections of Nearshore	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Reach 9: Picnic Point to Edwards Point	**Medium Benefit (if culvert removed)/Easier to Implement:** Picnic Point Riparian Enhancement: Project underway to do planting, weed control and some interpretive materials on the shoreline side of the railroad tracks. Project will addresses approx. 1200 ft of shoreline.
Reach 11: Shilshole to Locks (Estuary Reach)	**Medium Benefit/Easier to Implement:** Salmon Bay Natural Area: Increase rearing/refuge area for millions of salmon smolts that migrate through and use this transition area between freshwater and saltwater. Acquire the property, plant native shoreline vegetation, remove riprap, re-slope shoreline, and add gravel/sands where appropriate. The Salmon Bay Natural Area is downstream of the Hiram M. Chittenden Locks on the north bank.
Reach 9: Picnic Point to Edwards Point	**Medium Benefit/Moderately Difficult to Implement:** Picnic Point Culvert Replacement: Replacement of the existing culvert under the railroad with a trestle to restore connectivity and improve sediment transport from the uplands. Project may also benefit fish passage.
Sub-Reach 9.04: Lunds Gulch	**Medium Benefit/Moderately Difficult to Implement:** Lunds Gulch Culvert Improvement and Riparian Enhancement: Project could take several forms. One option would be to implement Snohomish County's plan to replace the existing box culvert beneath the railroad with a wider box culvert as described in the Puget Sound Tributaries Drainage Needs Report. This project plan also includes riparian vegetation enhancement above and below the culvert, creation of an off-channel pond in the park, and placement of large woody debris in the pond. A second project option would be to replace the existing box culvert with a trestle to restore connectivity, improve sediment transport, and reduce flow-dependent fish passage problems. Project could also explore the potential for marine riparian vegetation restoration/enhancement on the beach side of the tracks, including potential beach nourishment opportunities. County park includes approximately 1050 ft. of shoreline.
Sub-Reach 10A.12: Pipers Creek	**Medium Benefit/Moderately Difficult to Implement:** Pipers Creek Culvert Replacement: Replace the existing culvert under the railroad with a trestle to restore connectivity and improve sediment transport.
Sub-Reach 8.05: Big Gulch	**Medium Benefit/Harder to Implement:** Shipwreck/Hulk Creek Restoration - Work with the property owners to enhance the marine riparian vegetation at the site. This would increase the amount of shade for potential forage fish spawning in the upper intertidal zone. Approximately 1000 ft. of shoreline restoration potential.
Reach 11: Shilshole to Locks (Estuary Reach)	**Medium Benefit/Harder to Implement:** Salmon Bay Dock Consolidation: Work with dock owners/boat ramps to consolidate and reduce the number of docks and hardened structures, within salmon bay. Area is migration corridor. Docks, ramps and bank hardening changes the inter-tidal plant/animal community (prey types).
Reach 8: Mukilteo St Park to Picnic Pt	**Medium Benefit/Harder to Implement:** Nakeeta Beach Home Acquisition: Restore the site by purchasing the fee simple property rights for all of the parcels and removing the houses, fill, and sea wall.

Nearshore Draft Restoration Prioritization, cont.

Sections of Nearshore	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Sub-Reach 9.08-9.09: Shell Creek	**Medium Benefit/Harder to Implement:** Shell Creek Beach Nourishment: Conduct beach nourishment activities at the mouth of Shell Creek near Yost Park.
Reach 10B: Meadow Pt to Shilshole	**Medium Benefit/Harder to Implement:** Golden Gardens Pocket Estuary: Explore creation of pocket estuary at Golden Gardens Park (owned by Seattle Parks) that juvenile fish can access. The north end of the park has a perched wetland area that has a great deal of flat land that could be converted to a more substantial wetland complex. North end of the park could be modified to allow fish to have access to the wetland.
Reach 12: North Discovery Park to West Point	**Medium Benefit/Harder to Implement:** West Point Pocket Estuary: Explore creation of pocket estuary at West Point (owned by King Co.). This area used to have some form of salt marsh that appears to have allowed fish access (Seattle Tide Land Map 1895). Currently there is a skinny, long, perched wetland between the bulkhead and the facility. It seems like it would be possible to expand the length of this wetland (towards the lighthouse) and come up with a permanent engineering solution to allow fish access.
Sub-Reach 10A.10: Boeing Creek	**Medium Benefit/Harder to Implement:** Barnacle Creek Wetland Construction: Create tidally influenced wetland habitat on the east side of Burlington Northern Railroad Tracks at Barnacle Creek.
Reach 11: Shilshole to Locks (Estuary Reach)	**Medium-Low Benefit/Moderately Difficult to Implement:** Azteca/Golden Tides Restoration: Acquire and restore the Azteca/Golden Tides site at the entrance to Salmon Bay from Shilshole Bay. The project envisions removing over-water structures and possibly part of the Ray's Boathouse dock to expose a large stretch of shoreline, including the NW 60th Street End Park, for habitat restoration and public access. Pilings should be removed, and riprap removed where it has fallen into the water. There may be an opportunity to create forage fish spawning habitat.
Reach 11: Shilshole to Locks (Estuary Reach)	**Medium-Low Benefit/Moderately Difficult to Implement:** Seattle Street End Near Salmon Bay: Increase rearing/refuge habitat for juvenile salmon by restoring the conditions at this site, which is located downstream of the Salmon Bay Natural Area just west of the railroad bridge. Alternative bank protection measures would be used to create a more gradual slope. In addition, riparian and emergent vegetation could be planted, and the substrate could be amended to restore nearshore habitat. Site includes approximately 70 ft. of shoreline.

Nearshore Draft Restoration Prioritization, cont.

Sections of Nearshore	Project Descriptions with Evaluation for Benefits to Chinook and Feasibility
Sub-Reach 8.05: Big Gulch	**Medium-Low Benefit/Harder to Implement:** Big Gulch High-Flow Bypass and Restoration: A High-flow bypass has been proposed by Snohomish County, Mukilteo and the local sewer district to address drainage and related erosion problems in the basin. Riparian restoration (improving nearshore habitat around the Big Gulch Creek outfall by adding sediment along the seaward side of the railroad to recreate a beach profile that will support marine riparian vegetation) has been proposed to accompany this project.
Reach 8: Mukilteo St Park to Picnic Pt	**Low Benefit/Easier to Implement:** Mukilteo Lighthouse Park: Enhance the beach profile and marine riparian conditions by removing or setting back the existing park facilities along the shoreline and planting native marine riparian vegetation with only limited access points to the beach.
Sub-Reach 9.08-9.09: Shell Creek	**Low Benefit/Easier to Implement:** Bracketts Landing Park Vegetation Enhancement: Riparian vegetation enhancement at Bracketts langing including addition of low-growing trees. There is an invasive species problem just to the north of the site. Further enhance the marine riparian vegetation by adding native plants to existing backshore areas and removing non-native invasive plants where appropriate and compatible with existing park uses.
Sub-Reach 9.08-9.09: Shell Creek	**Low Benefit/Harder to Implement:** Shell Creek Culvert Replacement: Replace the existing culvert where Shell Creek crosses the railroad with a trestle to restore connectivity and improve sediment transport.